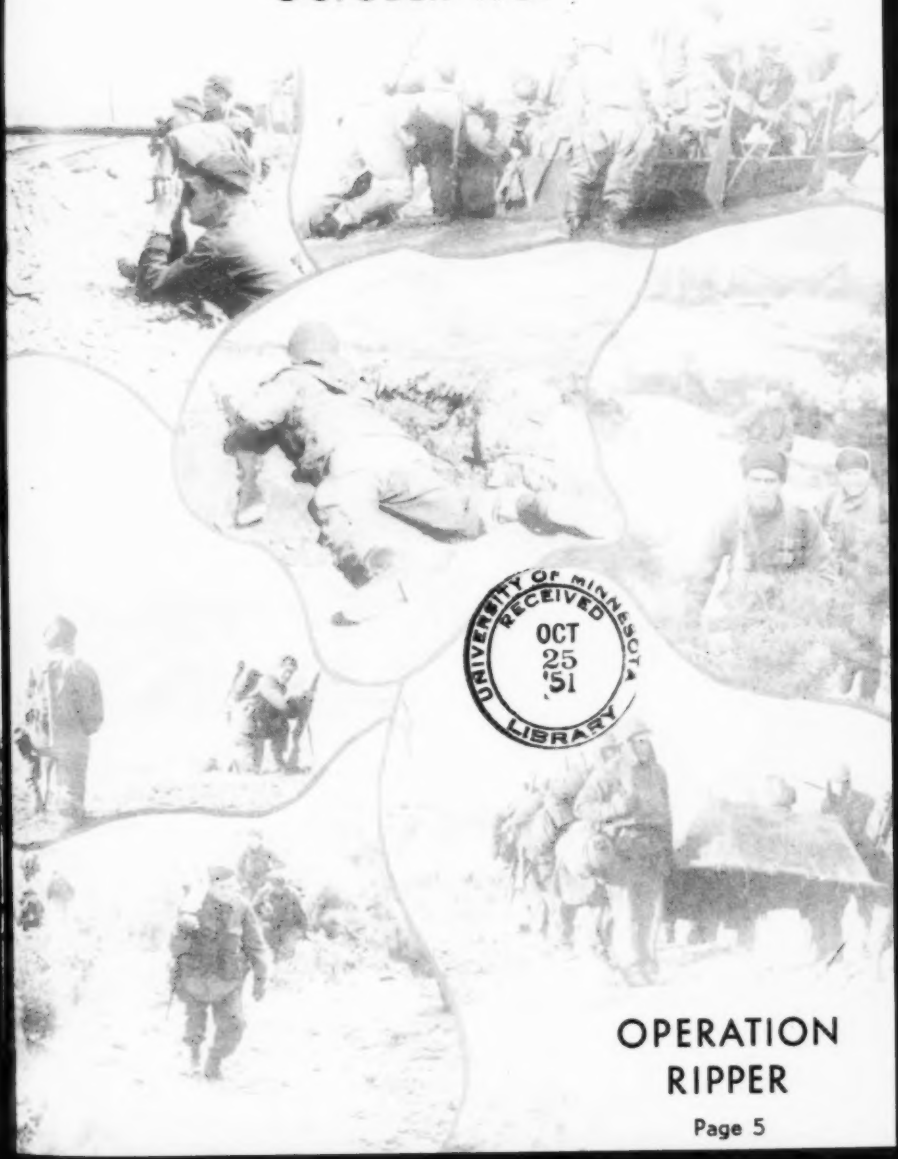
INFANTRY SCHOOL

QUARTERLY

OCTOBER 1951



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Editors

Maj John W. Baumgartner

Capt Arthur P. Price

Art and Layout

SFC William R. Wright

Circulation Manager

Maj Andrew W. Petrosky

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OPERATION RIPPER

(A condensation of the "Commander's Report" on this operation.)

The assault crossing of the Han River by the 25th "Tropic Lightning" Division on 7 March 1951 was a combination of a river crossing, mountain warfare, and winter warfare. The early success of OPERATION RIPPER was achieved by proper planning, aggressive infantry action, and maximum use of all supporting units. Success was assured the very day of the crossing. 7 March opened with the heaviest massing of fire in the Korean War and closed with three solid bridgeheads and, up to that time, the largest number of Chinese prisoners (213) ever captured in one day.

ARMY SITUATION

The Eighth Army launched a counteroffensive in January 1951 after having fallen back to a line generally along the 37th parallel following the Chinese entry into the war. By 20 February the successful drive had reached the Han River south of Seoul. A Chinese penetration in the Wonju area had been reduced and an all-out drive to the 38th parallel was anticipated. (See Figure 1, 8th Army Situation Map.)

CORPS AND DIVISION SITUATION

The I Corps, on the left flank of the Eighth United States Army on 1 March 1951, was composed of the 25th Infantry Division, the 3d Infantry Division, the 1st Republic of Korea (ROK) Division, and the 29th British Independent Brigade. (See Figure 2, I Corps Situation Map.)

The 25th Division had begun the January counteroffensive by attacking on the west coast of Korea and retaking Osan, Suwon, Yongdungpo, Inchon, and Kimpo Air Base and consolidating along the Han River west and south of Seoul. (See Figure 1.)

The division was then relieved by the 1st ROK Division and was recommitted 20 miles to the east in the corridor north of Kumnyangjang-ni. The 1st Cavalry Division, formerly in this area, was moved east to the Wonju area to reinforce the 2d Division. (Wonju is shown on Figure 1.)

In its new area, the 25th Division had the 3d Division on its left and the 24th Division of IX Corps on its right.

The 25th Division continued the attack begun by the 1st Cavalry Division and by 20 February had again reached the Han River.

On 28 February 1951, Lieutenant General Frank W. Milburn, Commanding General, I Corps, visited the 25th Division Command Post and alerted Brigadier General J.

Sladen Bradley, the Commanding General, for OPERATION RIPPER, the crossing of the Han River. The target date was 9 March 1951. General Milburn directed the division commander to prepare plans for the crossing for his consideration.

That evening, Lieutenant Colonel George H. DeChow, the 25th Division G3, presented four plans for the crossing (see Figure 3, tentative plans for Operation Ripper) to General Bradley. Plan #1 was favored as the best, at the time. However, a final decision depended on the amount and type of bridging equipment available, and this had not yet been specified.

1 MARCH

Plan #1 was presented to the corps commander the next day and was given his tentative approval. The regimental commanders were alerted personally by the division commander immediately after the meeting.

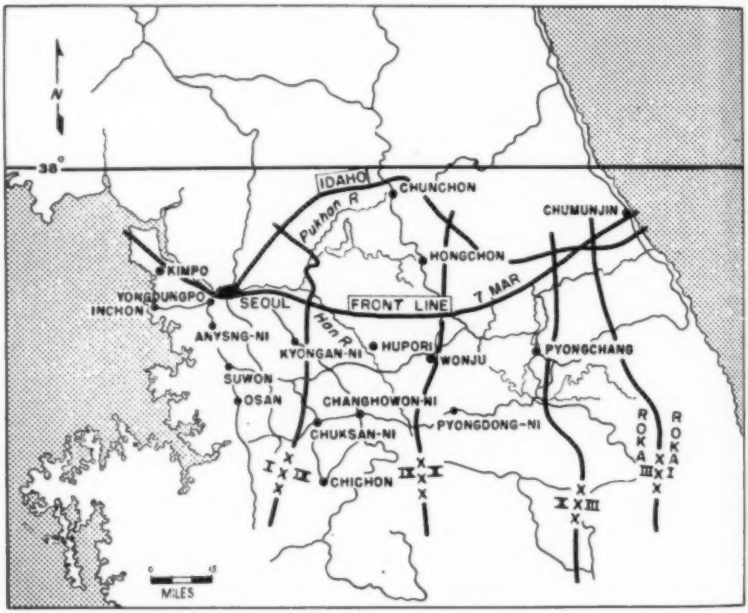


Figure 1. Eighth Army situation map.

That night corps G3 notified division G3 of a change in plans. Jumpoff was changed to D-3 (6 March).

2 MARCH

The corps order was published on 2 March. Prior to this the corps G3 met with the division G3 and personally explained the plans.

Eighth Army was to attack through successive phase lines to

seize Hongchon and Chunchon and destroy enemy forces, material, and supplies south of line Idaho. (See Figure 1.) The corps mission read the same and applied to its zone, which was the left flank of the Eighth Army.

bank of the river until line Albany (approximately 8 miles north of the Han) was secured. The regiment held south of the Han River as reserve could not cross the river without corps approval.

The 45th Field Regiment, Royal

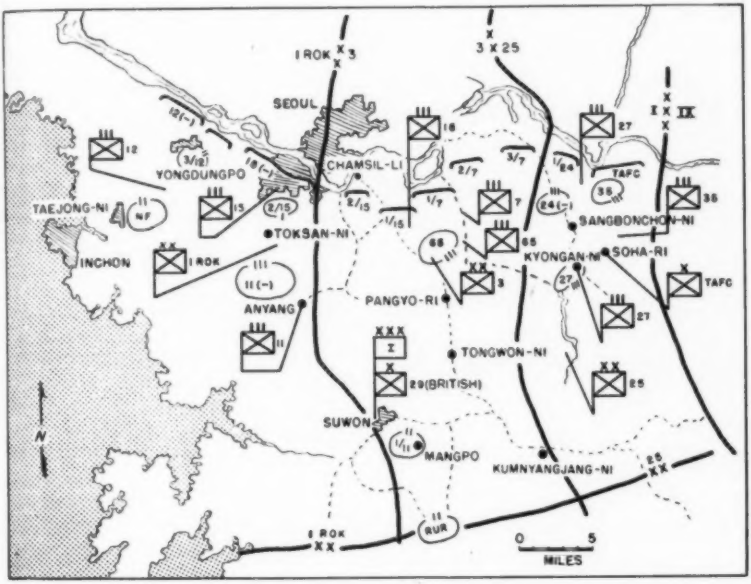


Figure 2. I Corps situation map.

The 25th Division was to make an assault crossing of the Han River in its zone. The plan called for narrowing the division front by approximately 3,000 yards on the left and coordinating with the 3d Division supporting fires, use of roads, and one bridge site in the 3d Division area. The order also prescribed coordination with the 24th Division on the right.

The order specified that a firm position be maintained on the south

Artillery (British) was to be placed in position south of the river so that its fires could reinforce the fires of the 25th Division Artillery.

In direct support of the division were a corps engineer battalion, a treadway bridge company and a pontoon bridge company. They were to construct and operate one or two 50-ton ferries, and construct the foot bridges and operate the assault boats. (See Figure 4, Engineer Sketch.)

Regiments began reconnoitering the crossing sites on 2 March and division arranged to obtain assault boats for training.

On the night of 2-3 March, one platoon of the division Ranger Company attempted to cross the river with the primary mission of capturing prisoners. A crust of ice on much of the river and a high wind prevented the Rangers' crossing.

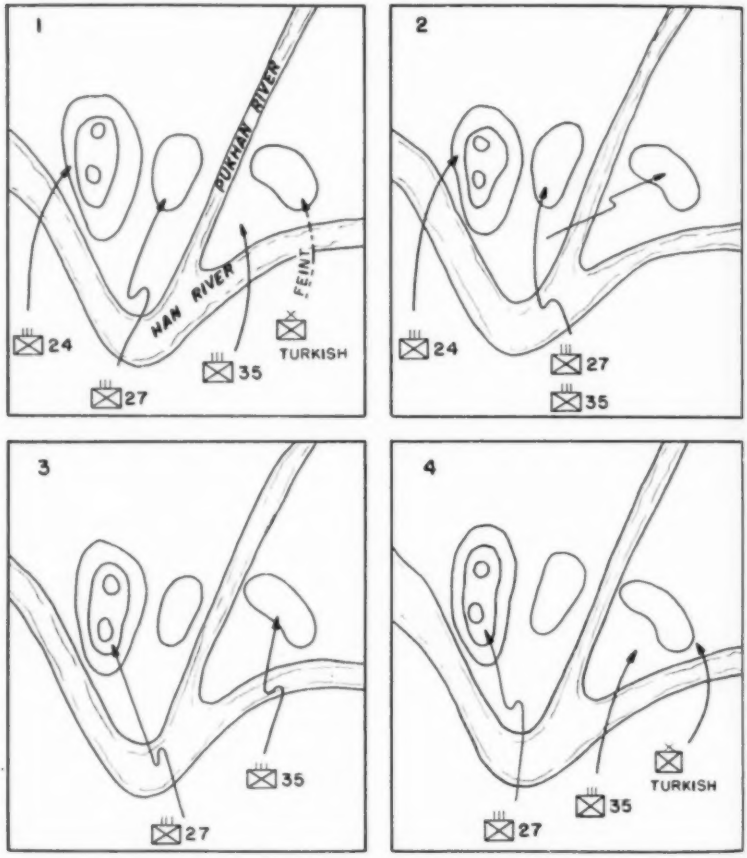


Figure 3. Tentative plans for Operation Ripper.

3 MARCH

On 3 March the division order was published. It called for assault crossings by all three regiments of the division on 060700 March. (See Figure 5, Operations Map.) The

27th Regiment was to cross in the center of the division zone at the bend in the horseshoe formed by the Han River. In support of this

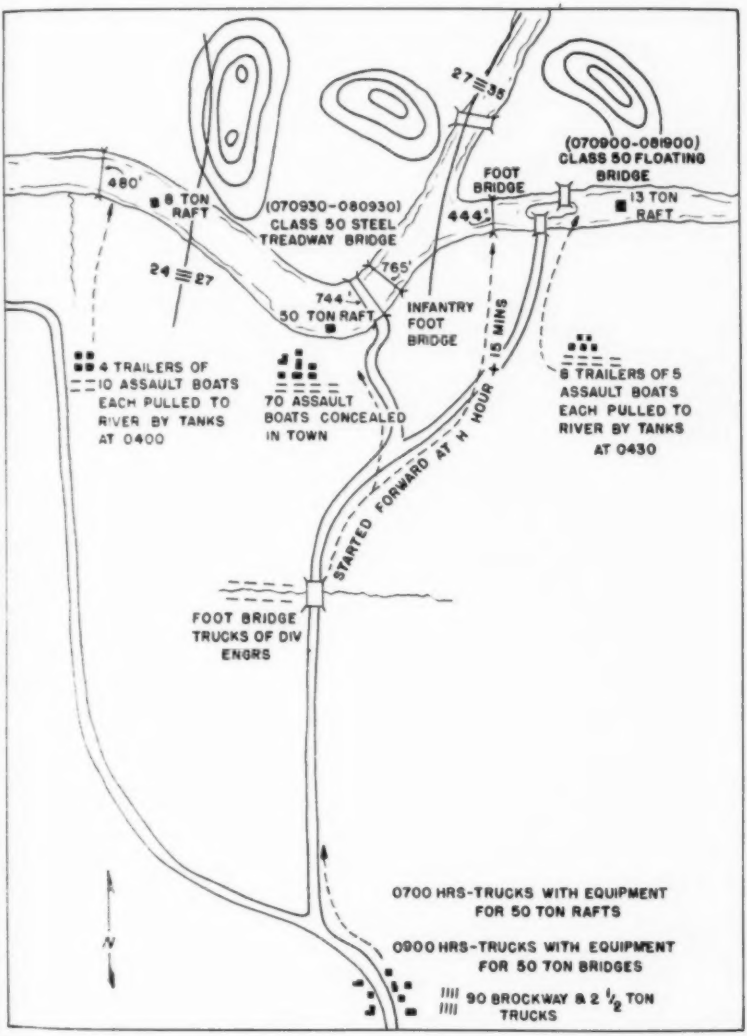


Figure 4. Engineer sketch.

crossing, the engineers were to operate 70 assault boats initially, then to construct one foot bridge, followed by one 50 ton raft, and a 50 ton bridge in that order. (See Figure 4.)

The 35th Infantry Regiment was to cross on the right with similar engineer support plus an additional 50 ton bridge that was to span the Pukhan River and join them with the 27th Regiment.

The 24th Regiment (less one battalion) was to cross on the left of the 27th Regiment in the 3d Division zone with similar engineer support but without a 50 ton bridge. The battalion not included in the assault crossing was to be held south of the river until released by division.

The 1st Turkish Armed Forces Command (Turkish Brigade), attached to the 25th Division, was to make a demonstration at 060700 east of the 35th Regiment but would remain south of the Han as division reserve.*

The 24th Regiment and the Turkish Brigade, the units then occupying the 25th Division Main Line of Resistance, sent out tank-infantry teams — one platoon of tanks and one platoon of infantry — to reconnoiter the south bank of the Han River and locate enemy positions near the river line. From the opposite bank both patrols received small arms fire which they attempted to silence by tank fire. Neither patrol gained definite information on locations or strength of the enemy. Engineer officers accompanying the patrol did profit by the action, picking up some information on possible bridge and fording sites.

These patrols were repeated daily up to the day of the crossing. In addition to the information they brought back they served to delude the enemy as to the day of attack. In addition to these patrols the regiments making the crossing sent out parties to reconnoiter the proposed crossing sites and assembly and objective areas.

For training purposes each of the regiments received one DUKW (amphibious 2½ ton truck) and 6 assault boats, M2 (12 man). A training memorandum on the use of assault boats had been distributed previously.

4 MARCH

Beginning 4 March, Joint Operations Center gave the 25th Division highest air priority. The bomb line was placed 2,000 yards north of and parallel to the river. This was close to the front lines. The distinct natural boundary offered by the river and the necessity for close air support made it desirable.

By 1500 hours, 4 March, the 2d Battalion of the 24th Regiment (25th Division) had been relieved by the 1st Battalion of the 7th Regiment (3d Division) and the 2d Battalion, 24th Infantry, had closed in the regimental assembly area, four miles south of the river. The division front was now such that the three assaulting regiments could

*Although the Commander's Report does not so state, the editors assume that the Turkish Armed Forces Command is the "regiment" held south of the river until released by corps as specified in the corps order.

consolidate and prepare for the crossing.

The 45th Field Regiment, Royal Artillery, manning 25-pounders with a 10-mile range, took up positions in the 25th Division zone to support the crossing.

The 35th Regiment moved into the assembly area as shown in Figure 2. From there it could reach the river in a short march.

Again, this was a day of reconnaissance and training by the regiments. Emphasis was placed, also, on preparing a coordinated fire plan of direct tank, 4.2-inch mortar, and artillery fires, with the artillery responsible for the planned twenty-minute preparation. Divarty was to coordinate all preparatory fires placed across the river by tanks, mortars, artillery, and the quadruple mounted .50 caliber machine guns of the antiaircraft artillery.

A telephone call from corps G3 at 2140 hours delayed the crossing 24 hours to permit the arrival of heavy engineer equipment which had not reached Suwon, some 35 miles away, until that day and had to be inventoried and combat loaded from railroad flat cars to Brockway* and 2½ ton trucks.

5 MARCH

At daylight on the 5th of March, the 3d Battalion, 27th Regiment, began movement to its assembly area. It was followed by the 1st Battalion at 1030 hours. The 2d Battalion, which was to be in reserve for the crossing, was not to move up until the next day. The assault boats of the 27th Regiment were placed in the attack positions before daylight.

Sixty LVT's,** originally indicated as available, were cancelled because it was impossible to move them overland to the 25th Division zone in the limited time before the operation.

D-day, H-hour for Operation Ripper was definitely set at 070615 March. This time was unanimously agreed upon by the regimental commanders as the best for achieving surprise while still affording enough light to operate effectively. Sunrise on 7 March was at 0656 hours.

6 MARCH

Except for the engineers who were working against time inventorying and combat loading their heavy bridging equipment, the day was spent mainly applying the finishing touches to coordination and training. A demonstration on the left by the 3d Division was set for 0645 hours on 7 March. It was planned to be primarily a tank effort of five tank platoons, but included 4.2-inch mortar and artillery fire. It was to be made about four miles west of the 24th Regiment.

The jump-off by the 24th Division, on the right, was set for 0630 hours, 7 March.

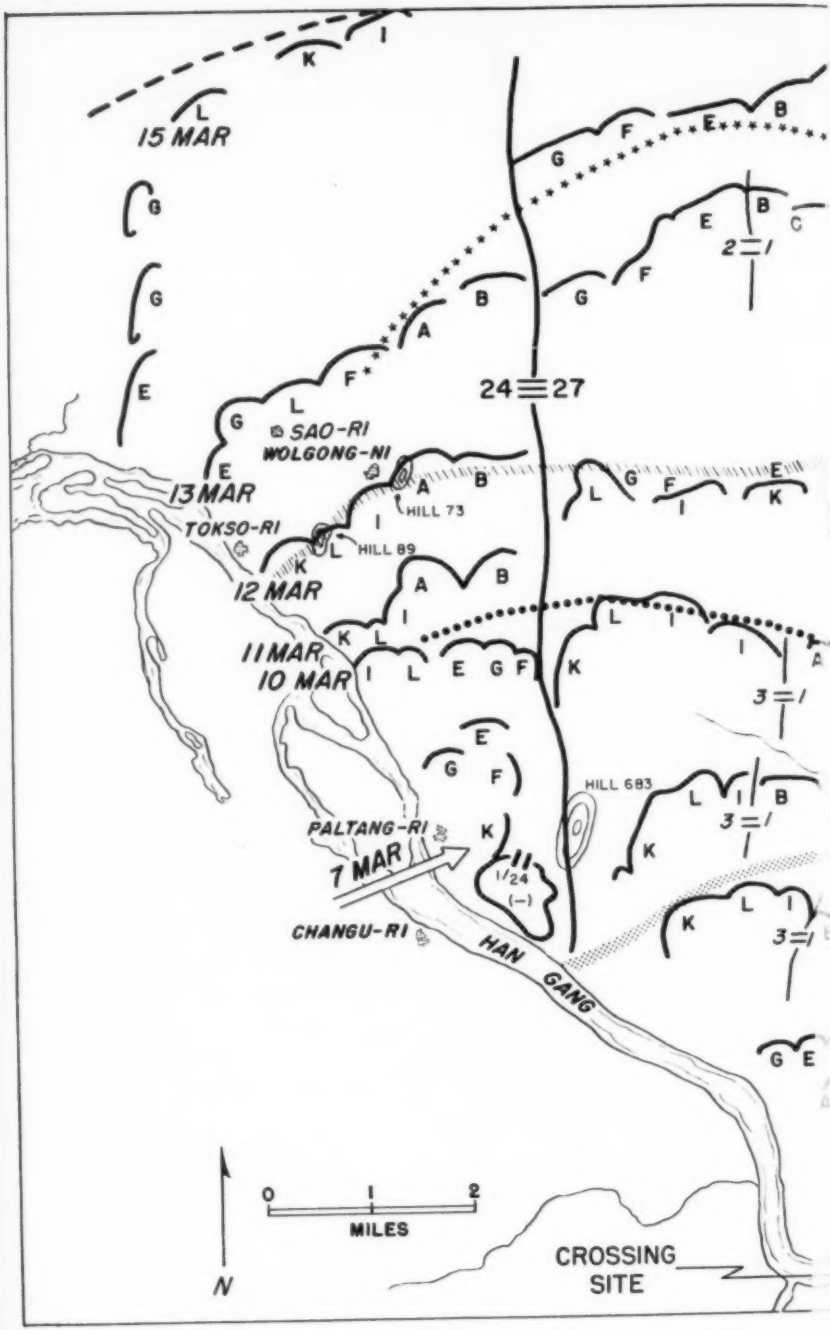
G2 SUMMARY

7 March 1951

Information of the enemy prior to the jump-off was extremely scarce. There had been no prisoners taken in over two weeks.

*_Brockway Truck_ — Crane-equipped truck for hauling and installing treadway bridging.

**_LVT_ — Landing vehicle, tracked — a full-track vehicle designed to operate on water as well as on land.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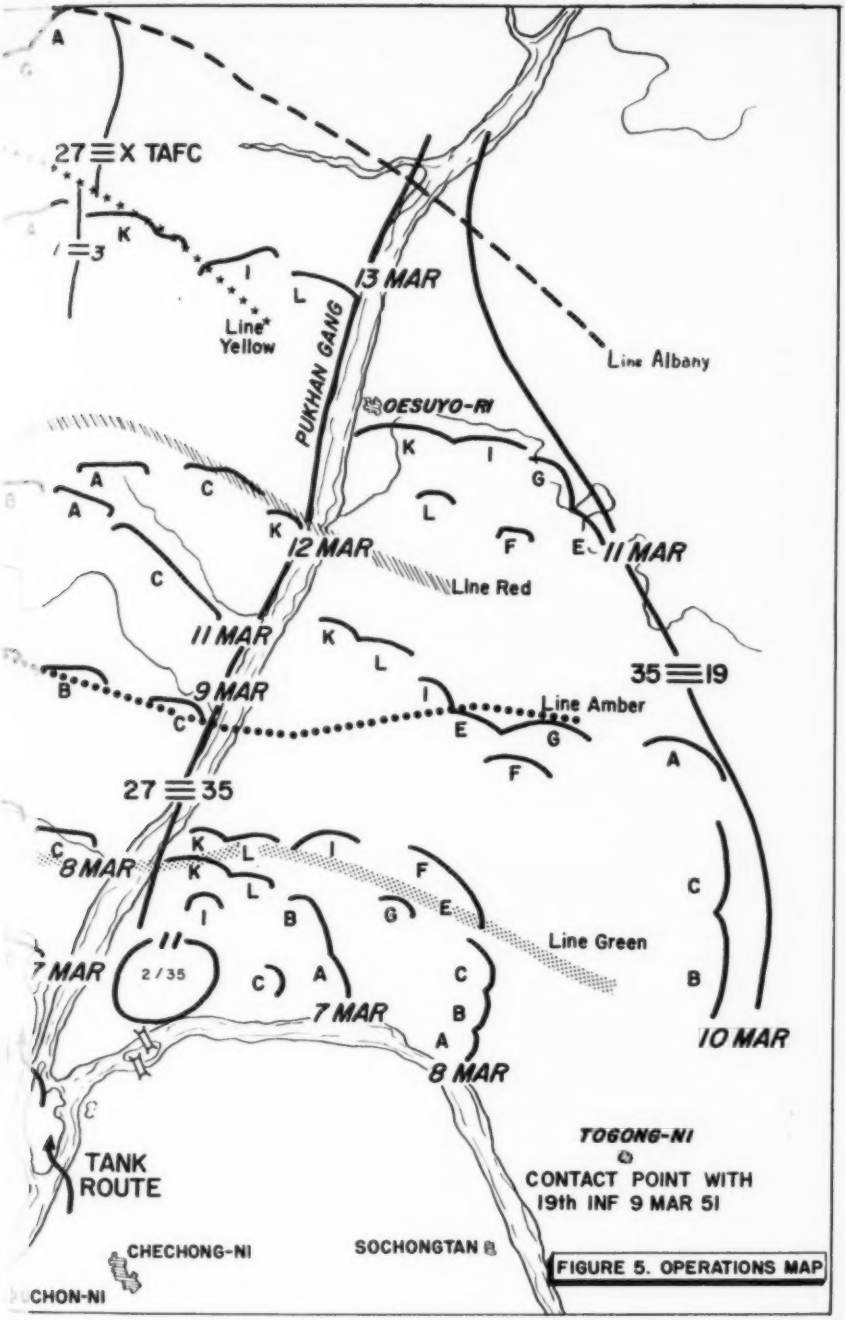

FIGURE 5. OPERATIONS MAP

The 38th and 50th Chinese Communist Armies were believed to be facing the 25th Division, but unconfirmed reports led to the deduction that these armies might have been replaced by the 25th and 26th Chinese Communist Armies from the 3d Field Army. It was believed that the enemy main line of resistance was along the north bank of the river.

Photographic coverage of the area was extensive with both vertical and oblique pictures. Fresh diggings were discovered from the photographs and were fired on by the artillery. The vertical photographs were studied by the engineers while the Infantry battalions found the oblique photographs valuable for selecting and designating objectives. (See Figures 6, 7, 8, 9, and 10.)

The 25th Reconnaissance Company was largely ineffective since it could not cross the river. However, patrols along the south bank did provide means for the engineers to make ground reconnaissance.

The Ranger Company succeeded in crossing the river on the night of 28 February-1 March in the 35th Infantry Regiment zone. Although they went one mile beyond the river, they made no enemy contact and secured only negligible information.

G4 SUMMARY

7 March 1951

Most of the G4 preparations for the crossing were simply operational duties. The regiments had on hand two and one-half days' supply of C rations. The division POL dumps* had a four days' supply, rather than the normal one day's supply.

ORDNANCE

The division established no forward ammunition dumps especially for the crossing but the Infantry regiments echeloned their regimental trains forward. Two basic loads of all types of ammunition were authorized. However, only the artillery battalions carried unusual excesses of ammunition. They each placed approximately half a basic load on the ground at the gun positions and held a basic load at each service battery. During the preparation for the river crossing, the 25th Division Ammunition Officer approved transportation orders for 1,628 tons of ammunition of all types, which required 652 trucks to transport.

An Ordnance Forward Control Point was established as a collecting point for disabled vehicles near the front. This control point also was the operating center for wrecker service and had a tank transporter and a tank recovery vehicle for immediate use anywhere in the forward area.

SIGNAL

No unusual communication problems were encountered before the crossing. All radio, VHF,** and telephone circuits were operating normally.

Field wire was in critical supply at the time, but the units were issued their normal daily ration and were able to build up small

*POL dumps — Vehicle fuel and lubricants dumps.
**VHF — Very high frequency radio.

stockpiles for the operation. Signal Supply provided spiral-four cable and issued it to the regiments and the Signal Company for telephone communication across the river itself.

CHEMICAL

The 68th Chemical Smoke Generator Company reported to the division on 5 March 1951. The company was attached to the division and given the specific mission of smoking the front of the 2d Battalion, 24th Infantry Regiment, on call. It selected positions and decided to use one platoon of the company. Reconnaissance of the area had indicated a platoon could lay sufficient smoke to cover this battalion's front. (A smoke generator platoon can smoke a one mile front to a depth of seven miles.) The company carried a basic load of fuel to smoke the assigned mission for eight hours. Resupply of fuel was to be effected through chemical channels at the smoke unit supply dump. One platoon of this company remained at the division command post in reserve.

The 89th Medium Tank Battalion had four mechanized flame throwers and there were nine portable flame throwers in the hands of each regiment ready for use as needed. A service team from the 92d Chemical Service Company was attached to the 89th Medium Tank Battalion to service and fill both the mechanized and portable flame throwers.

MEDICAL

Medical units planned rapid evacuation of casualties. Wounded were to be carried to the south bank of the river by DUKW's and from there to the field ambulance loading point, about one mile south of the river, by litter jeep. Helicopters for evacuation were available on call.

TRAFFIC CONTROL

Traffic control points were set up to keep vehicles to a minimum in the crossing zones. Priority was given to the vehicles transporting the bridging equipment in the order of its need.

ENGINEER SUMMARY

7 March 1951

The equivalent of four engineer battalions was supporting the assault crossings. In addition to the organic 65th Engineer Combat Battalion, the 25th Division was supported by the 14th Engineer Combat Battalion. The 151st Engineer Combat Battalion and part or all of four other engineer companies also supported the effort.

The engineer reconnaissance began on 1 March. Reconnaissance was difficult, as anyone nearing the south bank of the river, either civilian or military, was fired on from the opposite side. The existing road net and locations with suitable approaches dictated the sites of the two 50 ton bridges; and their location, in turn, determined the general sites for the crossings. The sites for the Class 50 bridges were chosen by Colonel Emerson C. Itschner, the Corps Engineer Officer, whose men were to construct the heavy bridges.

Lieutenant Colonel McGlachlin Hatch, the Division Engineer Officer, by personal reconnaissance and with the assistance of his staff, selected the sites for the foot bridges and the assault crossings.

The assault boats in the 27th

Regiment area were concealed near the river edge but in the other two regiments arrangements were made for tanks to pull the trailers carrying the assault boats to the river banks under cover of darkness several hours before the jump-off. The foot bridges for the 24th and 35th Regiments were concealed in a stream bed about two miles from the river. This equipment was to be started forward at H-hour plus 10 minutes. The heavy equipment would move forward in two echelons. The first echelon, with enough equipment for the 50-ton rafts, was to be followed later by the remaining Brockway trucks with all the heavy bridging.

ARTILLERY SUMMARY

7 March 1951

The greatest massing of fire of the Korean War was to precede the assault across the Han River. Ten battalions of artillery were concentrated on the landing areas of the three regiments. They included 105-mm and 155-mm howitzers, British 25-pounders, and 8-inch guns. In addition to this artillery, 63 tanks and 36 4.2-inch mortars added their fires. Close to 19,000 rounds of artillery, tank, and mortar fire were expended in the 24 hour period of the crossing.

The twenty-minute preparation of 5,000 rounds before H-hour was made the responsibility of the division artillery, commanded by Brigadier General George B. Barth. Direct fire concentrations were assigned to the tanks, and the 4.2-inch mortars were assigned concentrations immediately in rear of those of the tanks. In addition to the preparatory fires, the artillery had scheduled fires until H-60 minutes. Sixty per cent of the artillery fires were to be with VT fuse. Tactical air support was not included in the fire plan as the time of attack was too early for enough daylight in which to control the fighter-bombers. Air strikes were to be employed on close-in targets of opportunity beginning at approximately 0700 hours.

The G3 Air section worked in close coordination with the Fire Support Coordination Center by setting up headquarters in the same operations tent. From here they controlled the Tactical Air Control Parties of the three regiments.

ARMOR SUMMARY

7 March 1951

Armor consisted of the 89th Medium Tank Battalion and Company A, 79th Medium Tank Battalion. The 89th had four companies of 15 M-4 tanks each, armed with 76-mm guns. Company A of the 79th, with its eight M-24 tanks, was attached to the 89th. Lieutenant Colonel Welborn Dolvin, Commanding Officer of the 89th Medium Tank Battalion, directed his planning along two lines. One was concerned with the direct fire to be delivered by his tanks from the south bank of the river before and during the crossing, and the other with reconnaissance for possible fords for the tanks.

The tank fire during the twenty-minute preparation, controlled by the artillery, was delivered by the eight tanks of Company A, 79th Medium Tank Battalion and all but one platoon of the 89th Medium Tank Battalion. Each tank was allowed 60 rounds for the preparation. One of the platoons in the

24th Regiment zone, six M-4 tanks with 76-mm guns, was formed into an assault gun battery.

Fording sites were found in all three zones.

In the 27th Regiment zone it was planned to use a DUKW to find a ford by the trial and error method during the assault crossing, using information gained from the plane reconnaissance.

In the 35th Regiment area a tank, unrolling cable attached to the winch of a tank retriever on the bank, was to attempt the crossing.

In the 24th Regiment zone a tank, accompanying one of the tank-infantry teams sent out daily before the crossing, managed to go half way across the river and the tank commander claimed that he had passed the deepest part and could have gone all the way across. On the day of the attack tanks forded the river at sites uncovered by each of these reconnaissance methods.

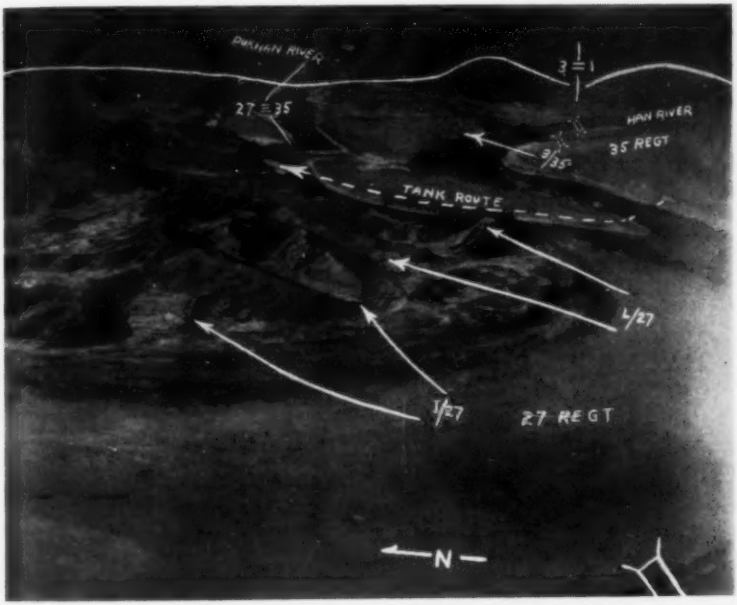

Figure 6. Crossing sites and boundaries of 27th and 35th Infantry Regiments.

27th INFANTRY REGIMENT

Direct Support:
8th Field Artillery Battalion
Attached:
Company C, 89th Medium Tank Battalion
Battery B, 21st Antiaircraft Artillery (AW) Battalion
Company A, 65th Engineer Combat Battalion
Lt. Col. Gilbert Check's 27th

Infantry Regiment got underway at 0100 the morning of the assault when the 3d Battalion, commanded by Lieutenant Colonel Richard W. Keyes, began movement to the attack positions. (See Figure 6.) The 1st Battalion followed shortly after. The 2d Battalion, the regimental reserve, did not move forward until the assaulting battalions had crossed.

Figure 7. A boat team of the 27th Infantry Regiment moves up to the Han River, 7 March 1951.

Companies I and L, the assault companies, followed up the intense artillery preparation so closely that they were on the far bank five minutes after the firing ceased. Enemy opposition was moderate and by 0742 hours, the initial objective had been seized. While the leading elements engaged the enemy, the remainder of the battalion crossed, using DUKW's and assault boats. (See Figures 7 and 8.) Recovering from the initial fire, the enemy reacted with mortar and artillery fire on the bridgehead and routes leading to the crossing site but this did little more than harass the friendly units.

A footbridge was completed by 0815 hours. The construction was hampered by the enemy fire, but work was never halted. Company C, 1st Battalion, crossed in assault boats while the remainder of the battalion used the footbridge. By 1030 hours the battalion was across.

Tanks of Company C, 89th Medium Tank Battalion found a ford about 800 yards east of the assault

boat crossing sites and crossed, first to an island, then to the mainland. This, an unplanned maneuver, in conjunction with the 1st Battalion attack, outflanked the enemy positions and so surprised them that they abandoned equipment and

able for, by 0930 hours, the G2 had identified all units facing the division as members of the 442d and 341st Regiments, 50th Chinese Army. (See Figure 9.)

By 1700 hours the advance had progressed some 4-5,000 yards in-

Figure 8. Members of the 1st Battalion, 27th Infantry Regiment, shove off for their assault boat crossing of the Han River, 7 March 1951.

fled. The tanks had accidentally entered the enemy rear area and captured 33 prisoners. (See Figures 5 and 6.)

At 1335 hours the heavy raft was completed and vehicles crossed on the schedule set up by the Division Motor Transport Officer. Supplies were built up and prisoners and wounded were evacuated by DUKW's.

Plans for rapid evacuation of prisoners to the regimental Prisoner of War Interrogation Team on the south bank proved very valu-

land. Air support, which was absent in the early hours of the attack, was very effective in the afternoon. The defense for the night was established on the line held at the time. (See Figure 10.) The 2d Battalion, which had now crossed, occupied positions in depth. By darkness, battalions had established ammunition supply points and ration dumps. Heavy Mortar Company had displaced all weapons by using DUKW's, and essential battalion vehicles were north of the river.

Using searchlights, the engineer battalion continued bridge construction throughout the night.

Assisted by air and artillery, the 1st and 3d Battalions continued the attack the following morning, 8 March. The 1st Battalion, securing

Figure 9. Evacuation of prisoners to the regimental Prisoner of War Interrogation Team was rapid. Here two boatloads of Chinese Communist prisoners are ferried to the south side of the Han River in assault boats, 7 March 1951.

objectives by 1030 hours, sent out strong combat patrols to make contact with the enemy, but the 3d Battalion, engaged with the Chinese on rugged terrain, did not secure their objectives until late in the afternoon.

Completion of the 50-ton bridge at 1030 hours, 25 hours after work on it began, greatly relieved a critical resupply situation. The 744 foot span, under ideal conditions, could have been completed in eight hours; although for combat the time of construction was not excessive.

On March 9, the 1st Battalion, employing a tank-infantry task force and strong combat patrols, secured its objectives against light resistance and the remainder of the battalion moved up and consolidated the position. The 3d Battalion secured initial objectives by 0850 hours. The enemy had abandoned the positions they had held tenaciously the day before. A combat patrol proceeding to the next objective engaged an enemy platoon and withdrew.

During 10 March, the 1st and 3d Battalions improved positions and sent forward strong combat patrols and infantry-tank teams to make contact with the enemy. There were

several engagements with small enemy groups but all patrols returned by 1730 hours. (See Figure 11.)

The employment of supporting weapons became difficult at this time due to the rugged terrain and the limited road net. Indigenous laborers and even a few pack mules seized from the enemy were used for resupply transport.

Continuing the attack at 110800 March, the 1st and 3d Battalions seized objectives against moderate resistance. Patrols moving forward in the zone encountered enemy and withdrew to friendly positions. (The enemy evidently defended a position until pressure was exerted when he would withdraw to the next terrain feature.)

The 2d Battalion, continuing as reserve, moved forward to defensive positions in the rear of the 1st Battalion. As frontages were becoming over-extended, a platoon from Company G was attached to the 1st Battalion. The 2d Battalion also patrolled throughout the rear areas during the dark.

On March 12 there was little change in the forward lines. The advance was delayed to allow friendly units on the flanks to pull up abreast of the regiment. The 2d Battalion relieved the 3d Battalion.

However, the relief was cancelled a few hours later when the ex-

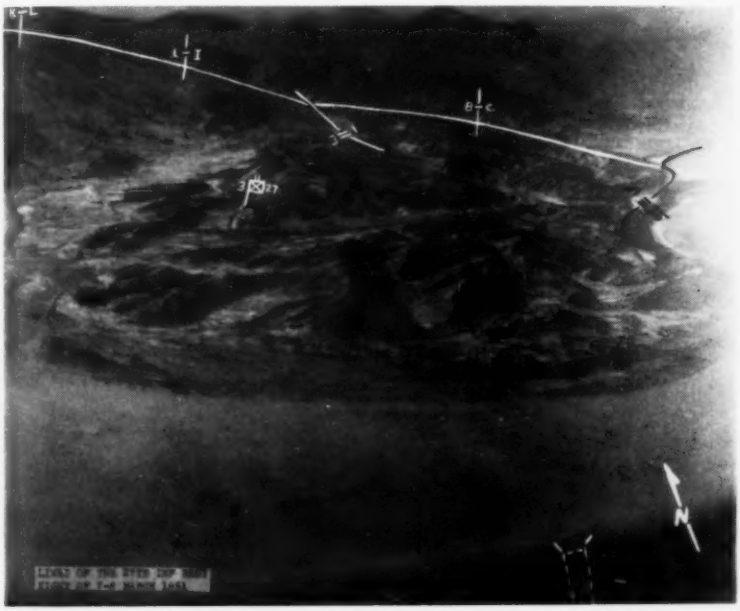

Figure 10. General location of 27th Infantry front lines, night of 7-8 March 1951.

tended frontage compelled use of the 3d Battalion to attack on the right flank of the regimental combat team the following day.

The attack on 130815 March proceeded with only light resistance and objectives were secured by 1400 hours.

On 15 March, the 1st and 2d Battalions continued north securing the high ground overlooking the improved east-west road to Seoul. The following day patrols north of the road screened the high ground without enemy contact.

Phase line Amber (Figure 5) was

Figure 11. This recoilless rifle team of Company H, 27th Infantry Regiment, has set up its weapon near the railway bridge across the Han River. This picture, taken on 10 March, was made during a day of comparative inactivity for the 2d Battalion, 10 March 1951.

The 14th of March was spent patrolling in the zone. The 3d Battalion was relieved by a battalion of the Turkish Brigade and reverted to regimental combat team reserve. The Turkish Brigade was relieving the 35th Regiment on the right of the division zone and one battalion extended into the 27th Regiment's lines due to a narrowing of the boundary on the right flank of the division.

now secured and Operation Ripper successfully completed. The 27th Infantry Regiment had made the primary effort in the crossing and by aggressive action and fire power had split the enemy's line and caused them to break contact.

35th INFANTRY REGIMENT

Direct Support: 64th Field Artillery Battalion

Attached: Company A, 89th Medium Tank Battalion

Battery C, 21st Antiaircraft Artillery (AW) Battalion

Company B, 65th Engineer Combat Battalion

The 35th Infantry Regiment, commanded by Colonel Gerald Kelleher, was on the right flank of the 25th Division.

hind a dike a few yards inland from the river bank. (See Figure 5.)

At 0715 hours, one tank platoon, using information gained from photographs, found a ford and successfully crossed the river.

By 0800 hours, the entire 3d Battalion was across with the leading

Figure 12. Once off the flood plain of the Han River troops entered more rugged terrain. This element of the 35th Division forges its way uphill during the afternoon of 7 March 1951.

The 3d Battalion of this regiment, under Lt. Col. James H. Lee, began to move into the attack positions at 0400. At the same time, tanks of Company A, 89th Medium Tank Battalion, towing the trailers loaded with assault boats, moved into the same area along a parallel trail.

When the artillery preparation lifted at 0615 hours, the assault boats were launched, twenty minutes later had landed, and their passengers were under cover be-

elements deployed along a railroad bed 1,000 yards inland. (This railroad can be seen in Figure 14.) Heavy small arms and mortar fire were slowing the advance.

At this time, the 1st Battalion moved up to the river bank and began crossing by assault boats since it was apparent that the very swift current would prevent completion of a footbridge for several hours.

The 1st Battalion having crossed the river, regiment ordered an at-

tack at 1100 hours for the final objectives of both the 1st and 3d Battalions. (See Figure 12.)

By 1415, both battalions had secured their objectives and had begun buttoning up for the night. The 2d Battalion crossed during the afternoon and assembled behind the

night that the 50-ton bridge was completed. All vehicles up to that time were ferried across on the 50-ton raft. Five DUKW's were also used to transport supplies. The footbridge, also completed during the day, was never used tactically.

On 9 March, patrols went out

Figure 13. Lines of the 27th and 35th Infantry Regiments, night of 7-8 March 1951.

two assaulting battalions. (See Figures 13 and 14.)

At 0800 hours the following morning, both battalions moved off for line Green (Figure 5) and by 1500 hours had secured objectives. In the afternoon, frontages were so extended that the 2d Battalion took up positions in the center of the zone.

It was not until 1900 hours that

from all battalions. There was heavy resistance on the left flank but only light opposition on the right. A patrol on the right flank made contact with a patrol from the 19th Infantry Regiment, 24th Division, at 0855 hours.

All three battalions made rapid advances the following day. (See Figures 15, 16, 17, and 18.) The 1st Battalion met the stiffest resistance,

but by nightfall had reached the division boundary and made a complete linkup with the 24th Division.

On 11 March, the 2d and 3d Battalions moved forward about a mile and a half without opposition while the 1st Battalion went into combat team reserve.

Regiment on the right was advancing across the front of the 35th Regiment. The 35th was being pinched out, and one by one its battalions on successive days (13, 14, and 15 March) withdrew to assembly areas south of the Han River.

The 35th Infantry Regiment, by

Figure 14. Lines of the 35th Infantry Regiment, night of 7-8 March 1951.

On the 12th, a tank-infantry patrol moved up the west bank of the Pukhan River about 3 miles north of the battalion positions encountering only four enemy who were taken prisoner.

A similar patrol, on 13 March went five miles up the river bank before receiving some small arms fire.

By this time the 19th Infantry

attacking vigorously at every opportunity, so mauled the enemy that after four days' fighting they broke contact and fled northward to more secure positions.

24th INFANTRY REGIMENT

Direct Support: 159th Field Artillery Battalion

Attached: Company A, 79th Tank Battalion

Company B, 89th Medium Tank Battalion
Company D, 21st Antiaircraft Artillery (AW) Battalion
77th Engineer Combat Company

The assault battalion of Colonel Henry C. Britt's 24th Regiment, the 2d Battalion, commanded by Lieutenant Colonel George A. Clayton,* began movement by trucks to the attack position at 0250 hours on 7 March and closed in the area at 0400 hours. The assault boats were hauled to this location on trailers pulled by the supporting tanks.

Just as the twenty-minute artillery preparation ceased at 0615 hours, the boats shoved off and twenty minutes later both assaulting companies were on the north bank. Assault units received sporadic mortar and small arms fire shortly after the crossing as the enemy recovered from the intense bombardment.

The battalion pushed forward, Company F reaching its objective at 0800 hours and Company E by 0930 hours. Company G, on the left of the battalion, secured its objective by 1600 hours. (See Figure 19.) At 1300 hours, Company K had crossed with the mission of protecting the ferry site and rear of the 2d Battalion.

Figure 15. Men of the 3d Battalion, 35th Infantry Regiment, wait to move out in an attack on hills held by Chinese Communists, 10 March 1951.

*Lt Col Clayton is the author of numerous articles that appeared in the QUARTERLY in 1948-50.

A footbridge was completed by 1230 hours. An eight-ton raft and a 50-ton raft were completed and were operational in the afternoon. One platoon of light tanks of Company A, 79th Tank Battalion, forded the river but the remaining tanks remained on the south bank where they could better cover the regimental flanks.

On the morning of 8 March at 0330, the enemy counterattacked the 2d Battalion from the northwest with an estimated battalion. Companies E and F withdrew about 1,500 yards. The attack was finally contained at 1030 hours by Infantry small arms, mortar and artillery fire. Company K, attached to the 2d Battalion, attacked east of Company F's position and by 1800 hours had regained most of the lost ground and stood only 300 yards short of the previous day's position. (See Figure 5.)

Company C crossed during the morning and moved southeast, clearing the road north of the river, and joined with the 27th Regiment by 1125 hours.

The 3d Battalion crossed the Han River early in the afternoon and took positions on the left of the 2d Battalion so as to be in position for the attack the following morning.

On 9 March, the 2d Battalion, with Company K attached, attacked and secured the southwest slopes of Hill 683 by 0749 hours. The battalion tied in with the 27th Regi-

Figure 16. Company K, 35th Infantry Regiment, moves up to attack Hill 304. While the going was easy here, it became more difficult as troops entered the hilly country in the background.

ment and consolidated positions. Objective 1, assigned by division, was now secure. The 2d and 3d Battalions sent out strong tank-infantry patrols from their positions and engaged an estimated three companies about 500 yards in front of Company G. Suffering heavy casualties the enemy withdrew to the northwest.

Throughout the entire day and part of the night of 9 March supplies and equipment continued to be ferried to the north bank since there was no heavy bridge supporting the 24th Infantry Regiment. A total of four light tanks (Company A, 79th Tank Battalion); six medium tanks (89th Medium Tank Battalion); and four quadruple mount .50 caliber machine guns were transported across the river.

On 10 March both battalions jumped off in a coordinated attack and by 1100 hours had moved forward some 1000-1200 yards and secured phase line Amber. Patrols were dispatched to the next line of ridges but, being taken under heavy mortar and small arms fire from well entrenched enemy, were forced to withdraw. On the afternoon of 10 March the regimental command post moved to the north side of the river.

Figure 17. This machine-gunner of Company K, 35th Infantry Regiment, participates in an attack on Hill 304, 10 March 1951. The terrain shown here is typical of that encountered after troops left the plain of the Han River.

Plans for 11 March called for the 1st Battalion to pass through the 2d Battalion and jump off at 0815 on a coordinated attack with the 3d Battalion, which was to be on

the left. The operation proceeded as planned and by 1015 hours both battalions had secured their objectives. Patrols sent out to the next phase line (Hills 89 and 73) returned with negative results. The ground showed evidence of recent occupancy, but entrenchments were empty.

On 12 March the 1st and 3d Battalions moved forward to the ridge line reconnoitered by the patrols the previous day. Tank-infantry patrols, dispatched to the next phase line, encountered mines and tank ditches. Patrols in the vicinity of Sao-ri received small arms and automatic weapons fire and were forced to withdraw. Patrols, upon return to friendly lines, called for fire on suspected areas.

Plans for the following days called for the employment of all three battalions, but each battalion was cautioned to maintain a reserve of one company. The 2d Battalion was to be employed on the left of the 3d Battalion. The 3d Battalion then became the center unit with the 1st Battalion on the right tied in with the 27th Infantry Regiment.

Figure 18. Company K, 35th Infantry Regiment, now on the slopes of Hill 304, found resistance comparatively light but movement up the slopes difficult.

On 13 March all three battalions crossed the LOFD at 0815 hours in a coordinated attack to phase line Yellow. (See Figure 5.) No enemy opposed the advancing units and final objectives were secured by 1130 hours. Strong patrols to the front made no contact with the enemy.

Positions were consolidated on 14 March while the 3d Division, on

the left, pulled up abreast of the 24th Regiment's lines. Patrols to the front returned with negative results. Troops on line improved their positions.

The 24th Regimental Combat Team attacking at 0815 hours the following day with two battalions abreast advanced to the best terrain in the general vicinity of phase line Albany (Figure 5). The rest of that day and the following day were used for consolidating positions and patrolling to the front.

In eight days the 24th Regiment had made an assault crossing and pushed inland eight miles across rugged terrain, attacking a firmly entrenched enemy who finally broke contact when it became apparent that he could no longer reduce or contain the bridgehead.

TURKISH ARMED FORCES COMMAND

Four thousand yards east of the 35th Regiment crossing, the 1st Turkish Armed Forces Command conducted a demonstration by the 3d Company of the 1st Battalion from 0615 hours to 0730 hours on the morning of the river crossing.

Using eight 55-gallon drums and hammers, one squad vigorously pounded the drums while two rafts were being built. When the rafts were launched, the men on the hills near the river took up the noise making. The demonstration was covered by heavy machine guns

Figure 19. Lines of the 24th Infantry Regiment, night of 7-8 March 1951.

and mortars. Although men actually mounted the rafts, they made no crossing.

On 7 March one battalion of the Turkish Brigade was motorized and after the bridgehead had been established, moved to a point about 5000 yards south of the oxbow bend in the river.

On 14 March the brigade relieved elements of the 27th and 35th Infantry Regiments in the vicinity of phase line Amber.

SUMMARY

Lt. Gen. Frank W. Milburn, Commanding General I Corps, said, "The assault crossing of the Han River by the 25th Infantry Division was a well-planned, well-executed operation."

Detailed planning by all levels of command called for aggressive employment of Infantry and maximum use of all supporting elements. The initial assault, built up under cover of semi-darkness on the opposite bank before the enemy could react, was the key to success.

The twenty-minute preparation employing every supporting weapon and the close follow-up behind it were fundamental in securing this success.

Engineer work was all important in the operation. Construction and maintenance of the roads took the entire engineer effort up to 24 hours before the crossing.

The rafts and DUKW's, planned as alternate means of supply, were invaluable during the early hours of the crossing.

Friendly casualties for the period 7-16 March:

Killed in action:	58
Wounded in action:	333
Missing in action:	7
Total	398

Enemy casualties for the period 7-16 March:

Counted:	3601
Estimated:	8338

"The battle team is a team of many parts, the decisive element of which remains the same little-advertised, hard-bitten foot soldier with his artillery support."

— General of the Army George C. Marshall

GIVE AIRBORNE SPURS

By LT COL EDWARD M. FLANAGAN, Artillery

The ideas expressed in this article are those of the author and do not necessarily reflect current thought at The Infantry School.

At a prearranged signal — the opening of the first parachute over Los Baños internee camp, on the shore of Laguna de Bay — literally all hell broke loose on this Philippine island. A half U. S.-half native advance reconnaissance platoon, having landed the previous evening in bancas (native log canoes), jumped the Jap guards. A battalion of infantry and a battery of field artillery came ashore in Amtracs. Another battalion, motorized, with tanks attached, moved overland from concealed areas into their attack positions. The company dropped by parachute, quickly organized, teamed up with the reconnaissance platoon, finished off the Jap guards, broke into the camp and started directing the evacuation of the 2,147 Los Baños internees to the waiting Amtracs.

Eventually, all 2,147 internees were evacuated without injury; 219 Japs were killed; the combined air, land, and sea force of the 11th Airborne Division lost two men killed. A daring, well planned, hit and run, amphibious, parachute, overland raid behind the Jap lines paid off in the everlasting gratitude of the liberated internees and the countless rosaries of the grateful Maryknoll nuns who were among the rescued.

That's one kind of an airborne operation. It is at the opposite extreme from the massive, all-airborne, independent, strategic type airhead operation in which an airborne army, or larger, is landed behind enemy lines to create what can almost be termed a second front. (For further amplification of this type operation see "Beachhead of the Future" in the April issue of The Infantry School QUARTERLY or see the May 28, 1951, issue of *Life*.)

Some present day concepts have it that airborne units are strategic reserve troops; that they should be committeed only on command of an Army group commander or higher; and that they should be used only to influence the over-all theater situation. That makes airborne big picture stuff; it makes the employment of an airborne unit a high level decision; it simultaneously relegates a lot of well-trained, eager, combat troops to the job of sitting and waiting — or perhaps standing and guarding in rear area installations. That might be all right if our potential enemy were not so overwhelmingly superior in manpower. If we could afford the luxury of having airborne units in strategic reserve between missions, fine; an airborne soldier would be the first

to want the situation to remain that way.

But, obviously, we do not have a manpower advantage; we cannot afford the luxury of trained fighting troops doing more reserve and rear area duty than combat duty. As has been so often pointed out by our Joint Chiefs of Staff, we've got to make every fighting man count. More than that, we've got to make every man count for himself and the seven of his cousins who are in the industrial pipeline and the supply lines that back up the man with the rifle, the ground-gaining, terrain-holding, indispensable doughboy. We've got to take advantage of our industrial potential, our technological supremacy, our other obvious points of superiority which we currently have over our enemy. This last statement is no entry in a U. S. flag-waving contest; it is a statement of fact — one of those facts which we must consider when determining how to balance the manpower scales.

Battle of the Bulge veterans of the 17th, 82nd, and 101st Airborne Divisions, veterans of the 11th Airborne Division's lengthy ground campaign on Luzon, of the 82d's conflicts at Anzio, will wonder belligerently, (1) when they spent so much time in theater reserve between missions, (2) when they were wasted for long periods of time by walking guard over a mountain of 10-in-one rations. (The 13th Airborne Division, alerted about six times for combat airborne missions that never came off, will, on the other hand, know what theater reserve means.)

Granted that the airborne divisions in World War II fought many times as *ground* units between their airborne missions. The record bears that fact out. And right here another fact can be pointed out — in World War II, airborne divisions, units specially trained, specially equipped, specially qualified, were frequently used as ground troops. Wasted manpower? Only the battle historian of World War VIII, looking back to the ancient days of World War II for battle facts to prove that tactics remain the same — only weapons change — can be in a position to say. Nevertheless, such was the case — airborne units were used for longer periods of time as ground units than they were on airborne missions. And that is another fact that we'd like to use in this discussion.

Here is our problem — how to get the most out of the airborne manpower which we do and will have available; how, by the use of airborne forces, to cut down the enemy's manpower superiority.

It builds our morale, it stiffens the spine and braces the backbone of the public to hear talk about the independent type airborne operation, that operation in which the grand-scale, strategic airhead is initiated by air, is built up by air, is reinforced and evacuated by air, and, after sufficient build-up, out of which an airborne army comes storming to deal a lethal blow to the enemy, deep in his backyard. That, without question, is the ultimate goal of airborne planners and, for that matter, our military strategists of the highest level. And it should be. It's the purest use of an

airborne force. And the men who are believers in that ultimate use of airborne forces are not wild-eyed visionaries. Rather, they are our top military leaders today who are sold on the concept of the independent airborne operation.

But that type of an operation requires tremendous support. Take, for example, the airborne assault of the U. S. 17th and the British 6th Airborne Divisions across the Rhine River in March of 1945 (and this was *not* an independent type operation — an early link-up was preplanned and the success of the operation was dependent upon the link-up). In that operation, a total of 1,572 troop carrier aircraft and 1,326 troop and equipment carrying gliders, escorted and covered during the flight by 3,042 fighters, was required to support the airborne assault of two World War II-size airborne divisions in an airborne operation which was *tactical*, not strategic in scope. "But in this operation (crossing the Rhine) the two divisions were to drop close to the front lines, merely far enough back so that they would not be within the zone of our own light artillery fire."* This example gives some idea of just the initial lift necessary for a relatively large scale airborne operation.

Are we in a position to launch the independent, large scale airborne operation now? Do we have the aircraft and the troops and vast logistical support organization required for an operation of this scope? It doesn't take a man with a crystal ball or the files of the Russian Intelligence Agency to answer that question. We obviously do not have that sort of airpower and logistical support. When will we have it? When can we put on the operation which is so well described in the May 28 issue of *Life* magazine? Certainly not tomorrow or for a lot more tomorrows to come. Well, then, what are we going to do about this underdeveloped concept of warfare, the vertical envelopment?

It would appear that airborne forces could be used initially in the next war in smaller, tactical (as opposed to strategic) units like the cavalry of Civil War fame. But instead of having the airborne force go around a horizontal flank, cavalry wise, the force would go over the vertical flank. There's nothing new there either. That's been going on for quite a few years now. But, what we do want to propose is the *more* frequent, *more* shallow, *more* daring, *more* surprising, *more* imaginative use of the airborne forces at hand. While such use is being made of the airborne forces, we must not lose sight of that ultimate goal of the airborne units — that of initiating and carrying to complete fruition, the independent, strategic, grand-scale operation deep behind the enemy lines; an operation conceived with brilliance, executed with flawless timing, daring, precision, speed and surprise, and culminating in complete victory over a staggered, off-balance, groggy enemy.

Crusade in Europe — General Dwight D. Eisenhower, p. 388. Doubleday and Company, Inc.

One small scale operation has already been mentioned — the Los Baños raid of the 11th Airborne Division. Other small operations in World War II on the RCT level were conducted by the 503d RCT, by the 11th Airborne Division, and by the airborne divisions in Europe. The 187th RCT in Korea has already staged two airborne operations on the smaller scale level. It has been done. Our proposal is, however, that it be done *more often;* that airborne RCT's be given to, say, various corps for frequent airborne use in the old cavalry role; and that the airborne units *be used* as airborne units.

There are objections to such a plan. Objection One might be that once a corps latched on to an airborne RCT it wouldn't want to give it up at a time when larger scale, theatre-sponsored airborne operations were executed. Prior planning, firm command understanding, and intelligent decisions could rescind Objection One.

Objection Two might be that attaching airborne RCT's to corps or armies would piddle away the airborne force of a theatre. Answer to Objection Two: if airborne forces *could* be used in independent operations at theatre level, there would be no discussion here. There would be no need to break airborne forces down below that level. But since they can't be used in this way, (not enough aircraft) they must be broken down to a level where they can be used as airborne forces.

Objection Three, and this one would surely come from the airborne people themselves, would concern command — the lack of need for a division headquarters and the division supporting troops. That is not so. Division headquarters and division service troops would, obviously, be needed for the larger operations. Looking at it another way, the RCT's that would be attached to corps or armies could be separate RCT's but for the large, theatre-sponsored operations would be drawn in and attached to airborne divisions. Such a scheme would give the airborne division a much needed fourth RCT for use on the circular defense lines of the airhead.

Objection Four has to do with the relative lack of mobility of the airborne force once it is on the ground (as opposed to an Armored Cavalry Regiment, Light, for example). There's no disputing that fact. However, the mobility of the force while it is in the air, its ability to select targets over a wide range with virtually no concern for terrain obstacles makes it a highly maneuverable force to get behind the enemy, disrupt his rear, block his retreat, destroy his communications, deploy him prematurely, swing his flank, fool him as to major attack, scatter his reserve, plot his movements, report his defenses, and harass him in general. Those were missions of the cavalry and are missions which can be accomplished by today's airborne force.

Take for example, a corps consisting of principally three Infantry divisions, an armored division, and an attached airborne regimental combat team. The corps is ready to go on the offensive in relatively open country. The airborne RCT is dropped behind the enemy lines. One Infantry division breaks a hole

in the enemy defenses, widens the gap and rolls back the flanks. The armored division swarms through

Here again airborne people could raise another objection. When would the airborne RCT ever get

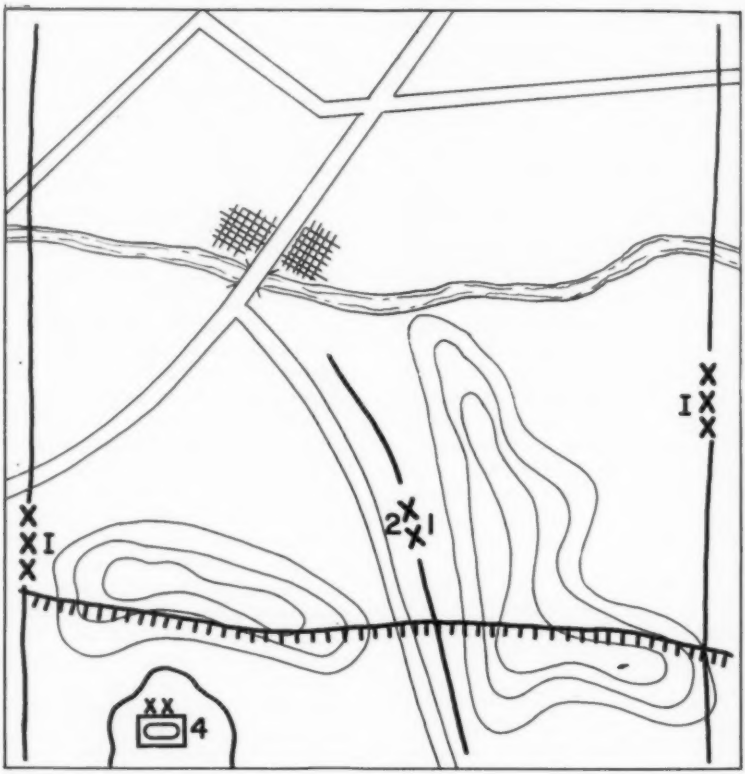

Figure 1. Situation — I Corps ready to attack.

the hole in the line on its way to link-up with the airborne. The Infantry divisions consolidate the gains and the corps is ready to move out again on a similar operation.

time to recuperate, lick wounds, re-equip? Answer — leap frog one rested RCT over the other. Use an airborne RCT from some other part of the army area which has been relatively quiet.

Failing that, use the same RCT over again, taking into consideration its condition. However, the war would be in its final stages and we would be launching large scale airborne operations on theatre

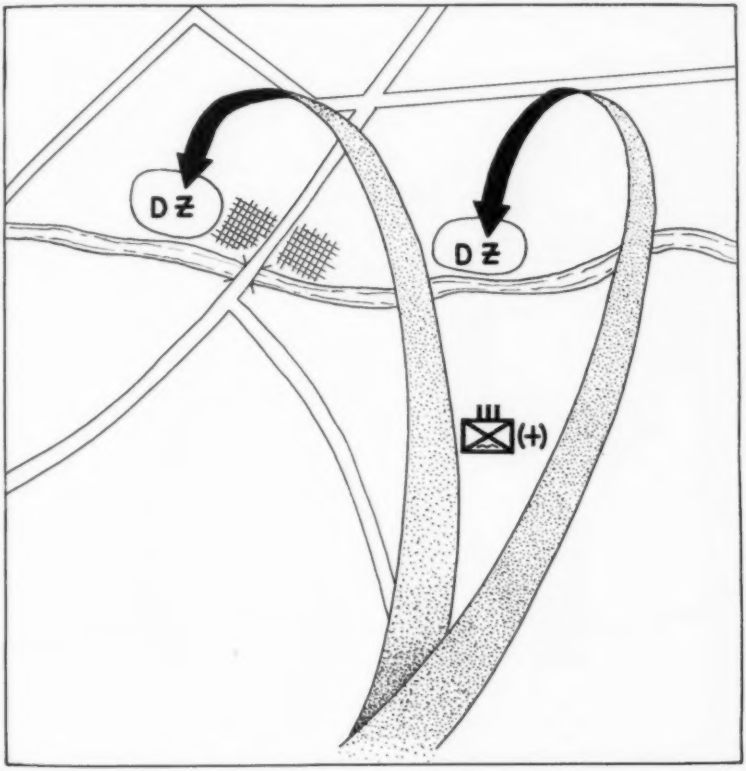

Figure 2. Airborne attack.

situation would probably not arise in which movement of a corps would be so fast that it would not have time to rest its airborne RCT. If the situation were that way, the level, not RCT operations on corps level.

An operation, such as the one described above, might look like this schematically. (See Figures 1

through 4.)

Jeb Stuart can put an "Airborne tab" above the crossed sabers on his cap. He was an expert at what is described here. He merely took more time to get where he was going. Once he got there, however, his mission was much the same as the airborne force.

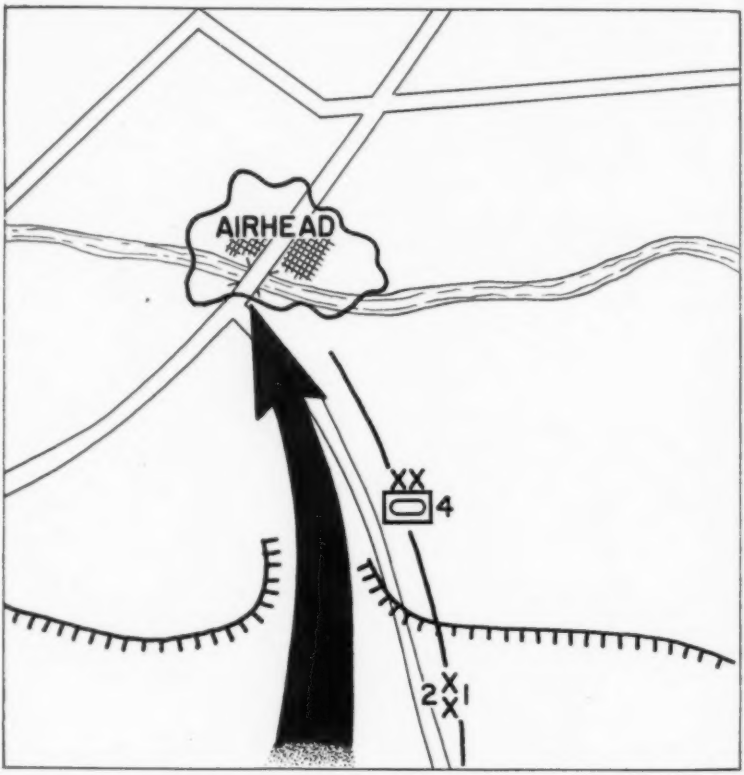

Figure 3. Infantry division blasts a hole — armor rushes through to link up with airborne.

These proposals are interim measures only. They are proposed to fill the gap between now and the time when the large scale airborne operations can be launched. These

proposals — the frequent use of airborne forces in the airborne role — triple in value. Airborne troops are trained for and are getting paid for

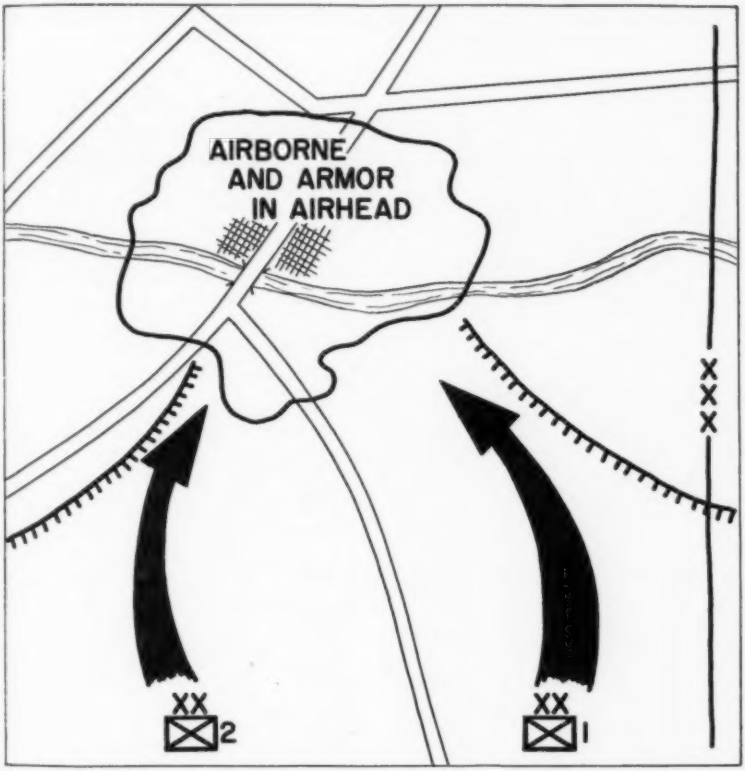

Figure 4. Airborne and armor link up — defend airhead until Infantry divisions arrive.

hope to utilize the airborne manpower to the fullest and thus make each airborne soldier double or jumping into combat. Make them earn it. They want to.

A WARNING*

By CAPT A. J. CRUPI, Infantry and
WOJG WILLIAM F. ODOM

*The views expressed in this article are those of the authors and do not necessarily represent current Army doctrine.

Figure 1. The Mongol of the 13th century was trained as a sniper with bow and arrow.

The soldier's unit had quickly surrounded the fortified city and had laid seige to it. He sat silently watching the barricades as friendly artillery rained fire bombs down inside the city. He made no particular effort to conceal himself, since he was out of range of enemy weapons; yet, each time an enemy exposed himself, the soldier was able, with his own weapon, to take careful aim and pick him off.

The time was March in the year 1241. The place was Hungary. The soldier was a cavalryman of the Mongol horde of Ogadai Khakhan, the son of Genghis Khan. His weapon was a horn-strengthened, double-curved bow and an arrow with a long, light shaft. His accuracy was such that he could hit a bird in flight.

Seven hundred and ten years later, we find the descendants of this soldier again an organized but barbaric horde, using the same ruthless tactics, controlling almost exactly the same peoples and territory, and again bent on world conquest and domination. A grandson, thirty-odd times removed, and equally as proficient with a sniper's rifle as the Mongol was with the bow, will sit calmly out of effective

range of our riflemen and pick them off one by one as they expose themselves, *unless we prepare for him.*

Snipers as we know them, specially trained, equipped, and employed, came forth in a blaze of glory in 1914. The German sniper dominated trench warfare for more

cessful use of snipers in Finland. Devoting full attention toward developing an elite sniper corps ever since 1930, Russia has continued to develop her sniper doctrine, and during World War II made full and profitable use of snipers against the Germans.

Figure 2. The M1C, sniper rifle. It is a standard M1 rifle fitted with telescope, flash hider, and cheek pad.

than a year before the British could develop snipers to meet and finally surpass him. After World War I, the belief was that "snipers went out with trench warfare". So strong was this belief that the Americans and the British fell right into line and gave little, if any, further thought to the matter.

World War II opened with evidence that nonconformists in the German and Japanese armies had trained and were successfully using snipers in all phases of warfare: the attack, withdrawal, patrol actions, and in his best employment — the defense. The British quickly revived their sniper training, and again were effectively using snipers toward the end of the war.

The Russian army, too, surprised everyone by its extensive and suc-

The American army adapted a sports model telescopic sight to the Springfield rifle and issued it to units, but training was left to the discretion of individual commanders, who, in most cases, had no qualified instructors to train snipers and no time to study their employment.

Our efforts in the field of sniping since World War II have produced negligible results. We have adapted a sports model telescopic sight to the M1 rifle, added a flash hider, and a cheek rest and issued it on the basis of one per rifle squad to infantry, airborne infantry, and armored infantry units. (See Figure 2.) While selection and training of snipers is the responsibility of all commands, and FM 21-75* outlines and offers a guide to a training pro-

**Combat Training of the Individual Soldier and Patrolling.*

gram, there is no army training program that allots time for this training nor any policy that makes it compulsory. The result is that we have produced few, if any, qualified snipers.

Today our army is once more engaged in combat. Having no official record of the use of snipers in Korea, we must seek the opinion of the men who have served there. The following answers to a questionnaire were furnished by forty-three officer and enlisted veterans of action in Korea.

A sniper was defined as "an expert rifle shot, trained in the skills of the individual soldier and the use of his equipment. He is usually armed with a rifle equipped with a telescopic sight, and can fire accurately at ranges not normally attempted by the average rifleman. His mission is to pick off key enemy personnel such as leaders, observers, messengers, gunners of crew-served weapons, and enemy snipers. In the absence of priority targets, he engages any target that appears, in an attempt to reduce the efficiency and morale of the enemy."

QUESTIONNAIRE

1. To your personal knowledge, did the North Korean or Chinese armies use snipers in Korea?

YES.....41 NO.....2

2. To your personal knowledge, were they effective?

YES.....32 NO.....10
QUESTIONABLE.....1

3. To your personal knowledge, did we use snipers in Korea? If not, state why you think we didn't use them.

YES.....15 NO.....28

Of those who answered "yes" — two stated that there was only one sniper's rifle in each company and that men designated to use them were not trained snipers, but were selected because they were excellent shots. Of the remaining thirteen who answered "yes," nine were interviewed. Their statements were that they did not have sniper rifles, nor trained snipers, but that platoon leaders and squad leaders used their best rifle shots as snipers. The use of these snipers was confined to defensive situations.

Of those who answered "no" — 20 stated that trained snipers were not available. Five stated that the opportunity to use snipers did not present itself, but implied that this referred only to their particular sector or period of activity by answering "yes" to the next question. The remaining three men stated they did not know why snipers were not used.

4. In your opinion, if well trained snipers had been available to us in Korea, could they have been used effectively?

YES.....38 NO.....5

Of those who answered "yes" — 22 stated that snipers could have been used in all phases of combat. Nine stated that snipers could have been used best in defense. Four said they could have been used best in defense and withdrawal. One stated they could best be used in offense and withdrawal. The remaining two had no opinion as to tactical use.

Again, an enemy, supposedly inferior in training and equipment, has used snipers extensively and effectively, yet we are apparently

making little effort to take advantage of this art.

At the time of this writing, there is a proposed sniper doctrine and course of instruction that will, if approved, solve some of our problems and weaknesses in this field.

Figure 3. Snipers should be experts in camouflage and concealment, as are the members of this sniper team who have made themselves nearly invisible through the use of camouflaged helmets and the sparse vegetation on their position.

However, the critical need for snipers should be understood, and considerable thought and attention be devoted immediately, and at all levels, to the training and employment of snipers if we are to compete successfully with the enemy in this field.

The greatest asset of a sniper is his ability to place accurate fire on small targets at extreme ranges. It has been estimated that 75% of the success of a sniper can be attributed to this accuracy, the other 25% depending upon his natural alertness, initiative, and tactical training. If we sacrifice one inch of this accuracy or range for any reason, we handicap the sniper and reduce this asset.

The present telescopic sight does not give us the range that we desire for sniping. The objections to this statement will be loud and many. It will be said by some that a more powerful telescope will magnify the human errors of the firer and defeat its purpose. However, we believe that a telescopic sight of four power will increase visibility at longer ranges and allow first round hits at 800 yards without undue magnification of the firer's errors.

We can use our expert competitive shots, and coaches of competitive teams to teach the sniper how to squeeze the last ounce of accuracy and range from his M1C. These people know how to groom a rifle to secure from it the maximum accuracy. They know the finer points of the effects of light and wind. They can give the sniper knowledge that will be invaluable to him.

We should issue our snipers armor-piercing ammunition which is more stable and has greater range than M2 ball ammunition. The ammunition used by a sniper to zero, and for all firing until he has an opportunity to re-zero, should be from the same arsenal, the same lot number, and if possi-

ble, from the same box, as different lots of ammunition will definitely change the zero enough to affect this type of shooting. This ammunition would not be special since overstocks, if accumulated, could be used by other riflemen.

We need more powerful binoculars for the sniper and his observer

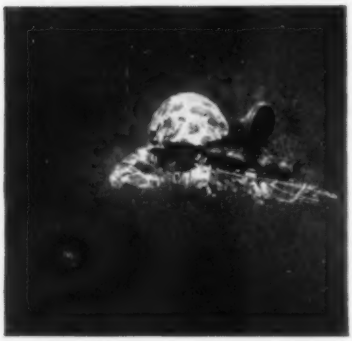

Figure 4. Cover remains important to the sniper at night although the need for concealment lessens. This sniper uses the sniperscope-equipped carbine for both observation and sniping. The sniperscope is an electronic instrument utilizing infra-red rays as an aid to night vision.

than those presently issued, and specialized training in the use of these glasses.

The Lovatt Scouts of the British army make a fine art of the use of the spotting scope and binoculars. We could learn many valuable lessons from them.

In far too many cases, men selected for sniper training are those left over after all other key positions have been filled. If we are to have good snipers, we must give a certain amount of priority in their selection. A sniper must first be an expert rifle shot. He must then be a man who has initiative and who shows adaptability to this type of work. As a rule, men who have lived outdoors, particularly trappers, hunters, and guides, make good snipers; however, this is not a prerequisite to sniping.

Centralized sniper schools should be established to train these snipers. In addition to experts who teach the finer points of shooting, there should also be experts in camouflage, concealment, patrolling, and intelligence subjects. (See Figures 3 and 4.) In this basic and all other subsequent training, remember that the highest level of accuracy in shooting must be reached and maintained. To achieve such a level, we must allot sufficient and continuous time, ranges, and ammunition for sniper firing.

Sniper training should be extended through the hours of darkness to include use of electronic infra-red equipment and its maintenance. (See Figures 4, 5 and 6.) Many men returning from Korea report that their sniperscopes and snooperscopes were not removed from their original packing cases since there were no men trained in their use.* Commanders fail to realize the value of this infra-red equipment designed as aids to night combat. In the sniperscope and snooperscope, organizations have an item of equipment developed

*The sniperscope and snooperscope are virtually the same instrument. Adapted for mounting on a carbine, it becomes a *sniperscope;* fitted with a hand-held mount and used for observation, it is called a *snooperscope.*

for the purpose of viewing objects or persons in the dark. The sniperscope can be used to engage those objects or persons with accurate

Figure 5. Carbine fitted with infra-red sniperscope.

fire up to a distance of 135 yards, as well as to pick up and send signals to another person equipped with a sniperscope or snooperscope at a distance of 4 miles.

The tactical organization of snipers must permit continuity of training and flexibility of employment in combat. Snipers should be taken out of the rifle squad and replaced by riflemen. A sniper team, consisting of seven men, should be placed in and operate out of rifle company headquarters. The company commander, or a higher authority who knows the tactical situation, should decide where and how to use the sniper team. The officer in charge of sniper training, perhaps one per battalion, should be a graduate of the sniper school. The leader of the sniper team should sit in on the briefings held by the company commander so he will be familiar with the situation and also so he can advise the company commander how he should best employ his snipers.

Figure 6. The snooperscope.

Finally, the sniper, upon graduation from the sniper's school, should be made a noncommis-

sioned officer. It has been recommended that the sniper squad leaders have the grade of sergeant first class. The remaining men of the squad should be divided into three two-man teams with the sniper team leader a sergeant, and the sniper a corporal. All men in this squad would perform as snipers.

We should have a doctrine giving complete and detailed information on tactical employment of snipers in each phase of an operation.

We would like to emphasize that the best active protection against snipers is to have trained snipers of our own. Because of his training and his knowledge of a sniper's way of thinking and operating, our sniper should usually locate the enemy when the average person cannot; and because of his ability to shoot, he should be able to put the enemy out of action after finding him.

We need qualified and well equipped snipers and we need them NOW.

"The leaders must have the men show them," the Yasa of Genghis Khan commanded, "all the articles to be carried into battle. They must look at everything down to the needle and thread; and if in this inspection they come upon a soldier who lacks something, they are to punish him." **From: *The March of the Barbarians* by Harold Lamb, copyright 1928, 1940, 1941 by Harold Lamb, reprinted by permission of Doubleday & Company, Inc.**

TIE IT DOWN—TIGHT!*

By MAJOR J. K. COCKRELL, Infantry

"I've learned a fair amount about tying down equipment and supplies in airplanes during the past week," said Captain Jackson to the regimental S3, "and there's more to it than I suspected. When you assigned me that class in 'Lashing for Air Movement' in the regimental Air Transport School I thought it would turn out to be about like lashing for rail movement."

"That's one reason I gave you that class, Joe," replied the S3 to his assistant. "I wanted you to know the subject well before we get into full scale air movement training or operations. Besides, now that you're a captain, who knows when you may be taking over as a battalion S3?"

"I like it here," Jackson protested.

"And you'll stay here till you have a little more experience under your belt. But keep an eye out for the future.

"Now, suppose you give me an idea of what you've learned and where you got your information, and then I'll try to fill in with some practical tips based on experience."

"All right, sir. I studied everything on lashing in TM 71-210, *Air Transport of Troops and Equipment*, both the official version published in 1945 and the draft revised edition put out by The Infantry School in 1950. I also talked to an Air Force friend of mine who had flown bulk supplies in the Berlin Airlift. From the two manuals I got two conflicting ideas: the old version included a lot of diagrams showing exactly what ropes should be tied to each of a number of pieces of equipment — jeeps, 105 howitzers, ¾-ton trucks, and so on. Each diagram showed exactly how to tie a certain piece of equipment at a specific place in a certain airplane — how many ropes to use, and where to fasten each one of them. That makes lashing easy if you have the book, and if you have the same item of equipment and the same airplane; and if you put the item in the same place *in*

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*The methods described in this article have been used in practice by certain airborne units, but they are not necessarily approved by The Infantry School.

Numerous tie-down systems have been devised by agencies interested in transporting equipment by air. The Infantry School uses one system that has worked satisfactorily in practice, others have been recommended by various aircraft manufacturing concerns, and Major Cockrell presents another. All of these systems have points of conflict.

A recent joint conference at Fort Bragg, North Carolina, considered all of the known systems and attempted to agree on a single one that would eliminate present conflict. It is believed that an agreement will result from this conference that will require all agencies presently teaching loading and lashing techniques to make minor adjustments in the particular systems taught in order to conform to a jointly acceptable system.

the airplane. The trouble is, a lot of the equipment shown was obsolete, none of the new airplanes appeared, and a lot of equipment wasn't covered. Then when I looked at the new draft manual, I found that all those diagrams had been thrown out. A simple set of rules had been substituted so you can figure out how many lashings are needed for *any* load in *any* airplane."

"I think you probably realize already why that change was made, Joe," the major interjected. "The number of different items of wheeled equipment in the infantry regimental combat team and the number of different types of airplanes in which it can be loaded would require an impossible number of diagrams to show how to tie each item in each plane and in the many different places in each plane."

"Why do you have to have a different set of lashings for each type of airplane, Major?"

"Because the patterns of the tie-down rings in different cargo airplanes vary widely. So, a diagram for tying down a jeep, say, in one airplane will probably not work in any other plane. And none of these diagrams let you place an item of equipment just anywhere in the airplane's cargo compartment, because in many places in the plane there won't be enough tie-down rings for that diagram to be followed."

"I can see what you mean about diagrams," Jackson said. "So isn't it better to stay well away from them, or any other stereotyped procedure, and use the set of lashing rules explained in the draft manual?"

"Yes, those rules show a good, simple procedure that will fit most situations, and I want you to teach them," the major said. "But they don't completely solve the problem. To show you what I mean, let's examine the principles we have to consider in lashing equipment (or supplies) in aircraft.

"First and foremost is *strength*. The whole reason we have to lash these things in is to keep them from bouncing around and, in rough weather or a bad landing, injuring themselves, the passengers, and the plane.* So our lashing job has to be strong enough to be safe. You've noticed, when riding in a car, the tendency of your body to move forward when you put on the brakes, or sideward when you go around a curve. Well, Air Force engineers have computed accurately the amount of force tending to move an item of cargo up, forward, backward, or sideward in a plane under any condition of flight or landing. They require us to tie each load in with lashings strong enough to prevent the load coming loose in any possible flight condition or any crash landing that doesn't completely destroy the airplane.

"They use the term 'G' to represent the weight of any item, and they tell us that our lashings must be strong enough to sustain a force of a certain number of 'G's'

*Changing the position of the load in the plane also would unbalance the plane and probably make it unsafe to fly. See "Balancing Cargo Aircraft," in the January 1951 INFANTRY SCHOOL QUARTERLY.

in each of five directions: upward, forward, rearward, sideward right, and sideward left, these requirements vary somewhat in different airplanes, and may come to us expressed like this: *'Loads in the C-119 airplane must be tied down for 3 G's of forward thrust, 1.5 G's of rearward thrust, 1.5 G's of sideward thrust (each side), and 2.25 G's of upward thrust.'*

"If we're tying down a jeep weighing 2500 pounds that means that we have to tie down for a possible force of 7500 pounds (3 G's) tending to move the jeep forward, a force of 3750 pounds (1.5 G's) tending to move the jeep to the rear, to the right, or to the left, and a force of 5625 pounds (2.25 G's), tending to move the jeep upward.

"OK, so much for strength. Next in importance—at least to my mind—is *simplicity*. It would be fine if we could sit up here in our ivory tower with a slide rule and plan every lashing on every load before an air movement. But rarely, if ever, will we be able to do that. And, military operations being what they are, if we did, there would certainly be last minute changes that would wreck the whole plan. Therefore, we have to have a tie-down system that is simple enough to be understood *at least by every NCO*, so that the ranking man with any aircraft load can determine by himself after he arrives at the plane how many lashings of what type will be needed to tie his equipment in that particular airplane.

"Almost as important as simplicity, and directly tied in with it, is *speed*. In most air movement operations we can't expect to have much time to load or unload equipment. Therefore, we have to avoid loss of time in our tie-down procedures. We do that in three ways: by using as few lashings as possible, by emphasizing speed in finding out how many are needed and where to put them, and by plenty of practice in actually fastening the lashings in place. Now let's look at that set of rules from the draft TM 71-210 and see how it fills those basic requirements for a tie-down system of *strength*, *simplicity*, and *speed*. The rules are:

"1. Fasten all lashings so that they make a 45° angle with the floor of the aircraft (vertical angle) and a 45° angle with the direction of flight (horizontal angle) (see Figure 1), and so that half of them are able to resist either direction of sideward thrust.

"2. Each such lashing exerts a force of exactly half its rated strength against the load in either a forward or a rearward direction. (Thus a rope with a rated strength of 2,000 pounds would exert a force of 1,000 pounds forward or rearward.)

"3. Compute the number of lashings needed to hold a force equal to the required number of G's of forward thrust. (If our forward thrust were 7,500 pounds, we would need 8 ropes with a rated strength of 2,000 pounds. Follow the same procedure for G's of rearward thrust.)

"4. These lashings will safely secure the cargo, and upward and

sideward thrust need not be considered, because the lashings used against forward and rearward thrust will withstand more upward and sideward thrust than needed.

"From a strength standpoint these rules are excellent, as they provide even more strength than is required against sideward or upward thrusts.

"From a simplicity standpoint

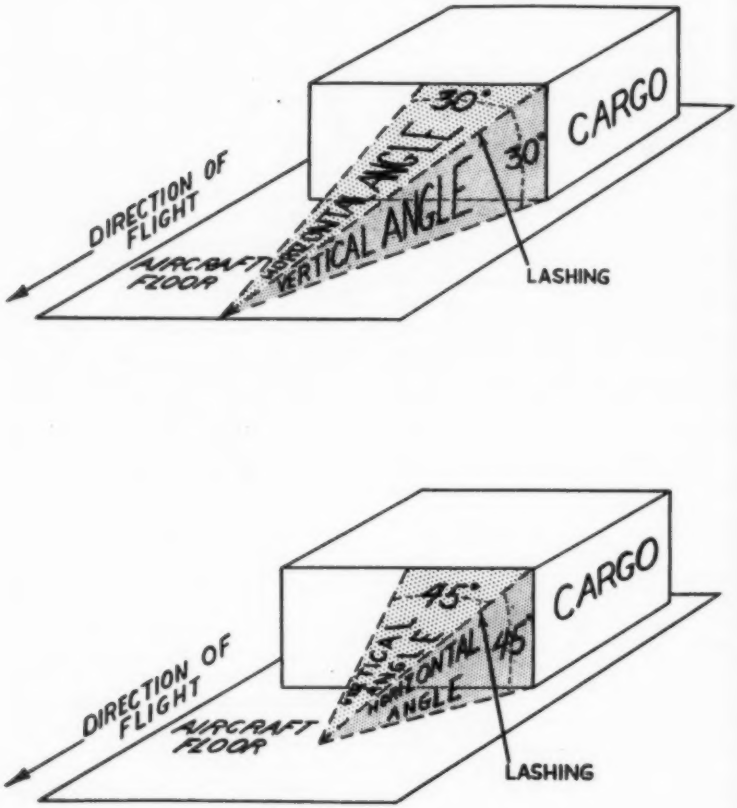

Figure 1. (Upper) A 30°-30° lashing. It will hold against a forward thrust of three-fourths its rated strength. (Lower) A 45°-45° lashing. It will hold against a forward thrust of half its rated strength.

they are ideal: a tie-down procedure could hardly be simpler and still be usable with almost any load in any type aircraft.

"There is no faster method for calculating the number of lashings needed, but in some cases this method can still be exceedingly slow. Here's the reason: with heavy items of equipment, when light capacity lashing materials are used (for instance, tying down the 2½-ton truck with ½-inch rope), this system requires the use of a very large number of lashings; and placing and removing so many lashings adds tremendously to loading and unloading time. To lash this load in a C-123 aircraft, for instance, would require us to tie in 152 separate ropes! When heavier capacity lashings are used, we are no longer bothered by large numbers of lashings, but, in many cases, there just aren't enough heavy capacity tie-down rings located to permit placing all lashings exactly at the 45°-45° angle. Therefore, when we are tying down heavy loads, we have to modify our method to reduce the total number of lashings as much as possible. Further, we want to be able to place lashings at a variety of angles, so that we won't be stymied by a lack of tie-down rings at the right places in the floor. Here's a rule that'll help us do both: any lashing placed at a 30° horizontal angle and a 30° vertical angle (see Figure 1) will hold a forward or rearward thrust of three-fourths of its rated strength, instead of half its strength, as the 45°-45° lashing did. Whenever we can use lashings at a 30°-30° angle, then, each one holds a bigger share of the load (we get 3 pounds of strength where we had only 2 pounds by using the same lashing at 45°-45°) and we cut down the number of lashings needed for forward or rearward thrust by ⅓!"

"In that case, Major," Captain Jackson cut in, "why don't we just forget all about 45°-45° lashings and always use 30°-30°?"

"Not so fast, Joe," the major replied. "It isn't, I'm sorry to say, as simple as that. When we can conveniently use 45°-45°'s we do, because they give us a good safety factor. And another thing: you remember when I was saying that the slip-stick boys have figured out exactly how many G's our tie-downs must be able to hold in the five directions of thrust? Well, what I didn't say was that these G figures vary with different types of airplanes. Now, the number of G's of thrust that we have to hold for the C-119 airplane is such that if we used only 30°-30° lashings the relatively small number of lashings required would not take care of upward and sideward thrust. Experience has shown that for this aircraft we can take care of upward and sideward thrusts by following this additional rule: after figuring the number of 30°-30° lashings needed, add one extra pair placed at the 45°-45° angle for each ten (or fraction of ten) 30°-30° lashings used. For all other present cargo aircraft except the C-124 we can use 30°-30° lashings exactly as we did the 45°-45° ones. The C-124, our heavy cargo airplane, presents many new and difficult loading problems because of its

peculiar design, and cannot be covered in a school such as ours."

"I can see that it isn't quite as simple as I thought, but I still can't see why it wouldn't be better to forget all about the 45°-45° rule that's in the book and always figure everything on a 30°-30° basis, with the extra pairs of 45°-45° lashings thrown in when we need them," said Jackson. "After all, we want simplicity, and it would be a lot easier to teach the one method and avoid mix-ups."

"You're quite right, Joe," the major admitted, "it *would* be a lot easier and therefore more desirable to teach just one system, but practical considerations simply won't let us. The problem is one that may be a bit hard to visualize until you actually get hold of an airplane and start piling stuff into it. I'll try to explain what I mean. You're working at close quarters in there. After all, in loading airplanes, space is at almost as great a premium as is weight — with the result that you very often can't find room enough to fasten a large number of lashings to the equipment and to the aircraft floor at any one angle. Besides lack of room, it's a question of not enough places on the equipment where lashings can be fastened. In such cases the man actually loading that particular airplane must be trained in tie-down techniques that are flexible. If he knows both the 45°-45° and 30°-30° rules he can use either one, or a combination of both, and with that much flexibility he can always find some way to tie his load down safely."

"Wait a minute, sir," pleaded Joe, "you just lost me. You mentioned using a combination of both rules. Would you explain just how you do that?"

"Sure. It's really not hard. First, you mentally divide the weight of the item you're tying down into two parts. Let's say its a 2½-ton truck, weighing 12,000 pounds, and you can't find places enough to tie it down with only 30°-30° lashings. Say to yourself, 'I'll tie 6000 pounds down with 45°-45°'s and 6000 pounds down with 30°-30°'s.' Then figure each problem out separately — in other words, a 6000 pound item with 30°-30° lashings and a 6000 pound item with 45°-45° lashings — and when you're finished, tie on the required number of lashings of both types. You'll have just as safe a tie-down job as if you had computed either all 45°-45°'s or all 30°-30°'s for the entire weight of the truck. The main reason for going through that extra step, of course, is to enable you to use tie-down rings that you need to use, and otherwise couldn't. See?"

"Yes, that's clear enough, but let me check one point; you didn't have to split that weight up half and half, did you? Couldn't you have figured any part of the weight by either method and still be safe?"

"That's right, and I'll give you another handy little rule of thumb along the same line. You remember that a 45°-45° lashing holds a forward thrust of half its strength, and a 30°-30° lashing three-fourths its strength. Thus, a lashing at any angle between 45°-45° and 30°-30° will hold a thrust of more than half its strength. Now, here's the rule: If all lashings are figured at 45°-45°, they can be *actually tied in* at 30°-30° or any angle between that

and 45°-45° and the whole combination will still be safe! Of course, the lashings with smaller angles are not holding as much sideward or upward thrust as 45°-45° lashings would, but as long as you figure the lashings needed on the 45°-45° basis the over-all tie-down job will be strong enough to hold sideward and upward thrust."

"You certainly get a lot of flexibility that way," Joe observed, "but I have a hard time seeing why we need flexibility so badly; it certainly isn't going to be easy to get all that across to some of the men who should know it."

"Our experience here in the past indicates that if you keep your conference from getting involved

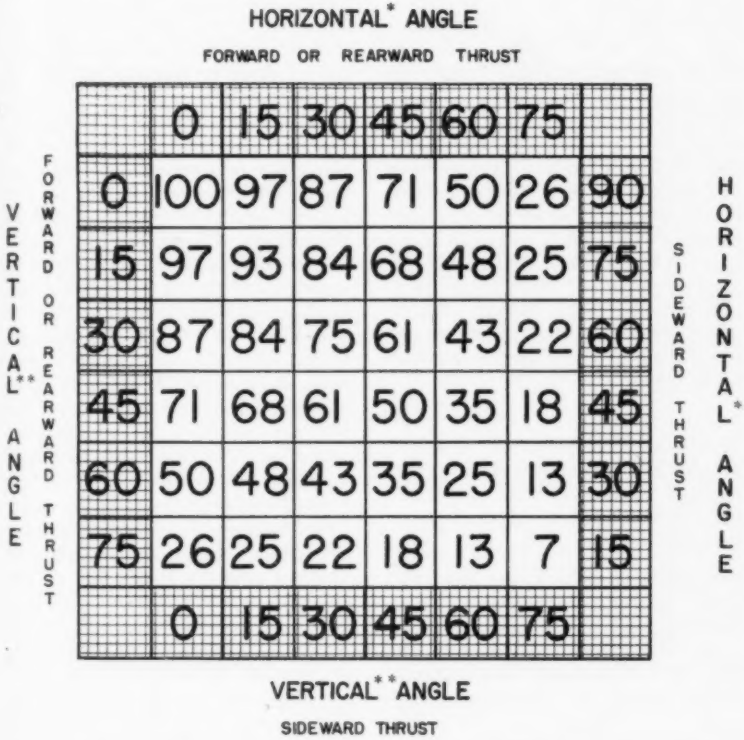
HORIZONTAL* ANGLE
FORWARD OR REARWARD THRUST
VERTICAL** ANGLE
FORWARD OR REARWARD THRUST
SIDEWARD THRUST
HORIZONTAL* ANGLE
VERTICAL** ANGLE
SIDEWARD THRUST
0 15 30 45 60 75
0 100 97 87 71 50 26 90
15 97 93 84 68 48 25 75
30 87 84 75 61 43 22 60
45 71 68 61 50 35 18 45
60 50 48 43 35 25 13 30
75 26 25 22 18 13 7 15
0 15 30 45 60 75

Figure 2. The rated strength of lashings decreases when lashings cannot exert a straight line pull in the direction of thrust. This chart shows what percentages of rated strength can be expected when lashings are tied in at various angles.

with *why* it works, trigonometry, and theory — and just teach the rules and spend a lot of time in practical work, you'll get it across very well," the major replied. "As to the need for flexibility, I know that it will become quite evident once you start loading 2½-ton trucks, 105-mm howitzers, and the like into our mock-ups. Until then try to accept the fact that tie-down rings never seem to be anywhere near the spot on the floor where you need them, and there are darn few places on some of these heavy vehicles where you can attach lashings. If the method you are using says to put all your lashings at a specific angle and its not physically possible to do so, something's got to give, and that something is liable to be safety."

"OK, I'll buy it, Major, but there's another thing I'm curious about. How do you figure that your lashing is worth half or three-fourths its rated strength against forward thrust?"

"I thought you'd get to that soon," the major replied, "and it just happens that I've got a chart right here that gives you all the answers. It's based on trigonometric ratios, computed for angles that are multiples of 15°; we mimeographed it here at regiment last year and distributed it to all units." (See Figure 2.)

"By using this chart you can find what percentage of its rated strength a lashing will hold against forward, rearward, sideward, or upward thrusts when placed at any combination of certain horizontal or vertical angles. We rarely need it, since we use the rules we've already discussed for almost all loads, but occasionally some unusually large piece of equipment presents special problems, and we use the chart to figure what individual lashings at odd angles will hold. It's quite simple to use. The angles listed along the top and right side represent various values of the horizontal angles (the angle between the lashing and the direction of flight) and the angles listed along the bottom and left sides of the chart represent values of the vertical angle (the angle between the lashing and the aircraft floor). If we want to find what *forward* or *rearward* thrust the lashing will hold, we use the figures at the top and down the left side. If we want to find what *sideward* thrust it will hold, we use the figures along the bottom and down the right side. Suppose we have a lashing that makes a 15° angle with the floor (vertical angle) and a 60° angle with the direction of flight (horizontal angle). Reading across from the figure 15° on the left to the vertical column under 60° at the top we find the figure 48 — that means that the lashing will hold a forward thrust or a rearward thrust of 48% of its rated strength (depending on how it is attached). Now to see what the same lashing will do against sideward thrust, we use the 15° figure on the bottom and the 60° figure at the right side. That brings us to 84, or 84% of the lashing's rated strength. Whether the lashing is effective against thrust to the right or left side depends again on how it is attached. For upward thrust we use the figures on the right side and the right hand column (the horizontal angle doesn't affect upward thrust). You

should teach the use of this chart, but emphasize that it is slow compared to our other rules, because if you use the chart you have to figure sideward and upward thrusts."

"I've got all that, sir," Jackson nodded slowly, "but before you go any farther let me check over my notes and see if I've got everything straight. This is what I'll include in my class:

"The 45°-45° Rule

1. Lash 'em all at 45° with the floor and with the direction of flight. Half to the right, half to the left.
2. Figure each lashing at half its rated strength.
3. Tie in against forward and rearward thrust only — forget all the others.

"The 30°-30° Rule

Same as the 45°-45° rule except each lashing is figured at three-fourths of its rated strength, and for the C-119 you add one pair of 45°-45° for each ten 30°-30° lashings or fraction over an even ten.

"The Combination Rule

Divide the weight of the load into any two parts, and figure each part by one of the above rules. Tie all lashings, thus computed, on the load. Use when neither rule fits on tie-down rings available.

"And for extra flexibility: When all lashings have been figured at 45°-45° you can actually tie any of them in at any angle between 45°-45° and 30°-30°.

"Finally, I'll show them the angle chart and how and when to use it.

"Now that I look at it, it doesn't look like very much," continued Joe. "How am I going to make any three hours of instruction out of that, sir?"

"You want more for your money, do you!" laughed the major. "Well, I'll tell you what I'm going to do; I'm going to have you asking me for *more time* instead of more material before you're through. Sharpen up a couple more pencils, and I'll have another crack at it. Ready? OK, let's consider *angles* a minute. How big do you think 30° is? 45°? How about 15°, or 60°, or 75°? Here, draw me a 30° angle. . . . OK, that's pretty good; it's not off enough to hurt anything. But I'll bet you've had some training in angles sometime or other, haven't you?"

"Yes, sir, I had geometry in high school and college and a little mechanical drawing."

"Just what I thought; but not every man you teach will have had his eye trained as yours is, and we've got to help those men to know at what angles their lashings are tied. I know of two good ways to do it — there are probably many more. One, which takes quite a bit of time, is to teach a man to estimate angles by eye; teach him to split a right angle by eye into 2 or 3 parts, and then split the parts into halves or thirds. That's too time-consuming for a short course like the one you're going to teach, so I'd suggest you teach the Weapon Rule."

He turned to the operations sergeant, "Say, Sergeant Parks, hand me that carbine over there, will you? Thanks. — You can use either

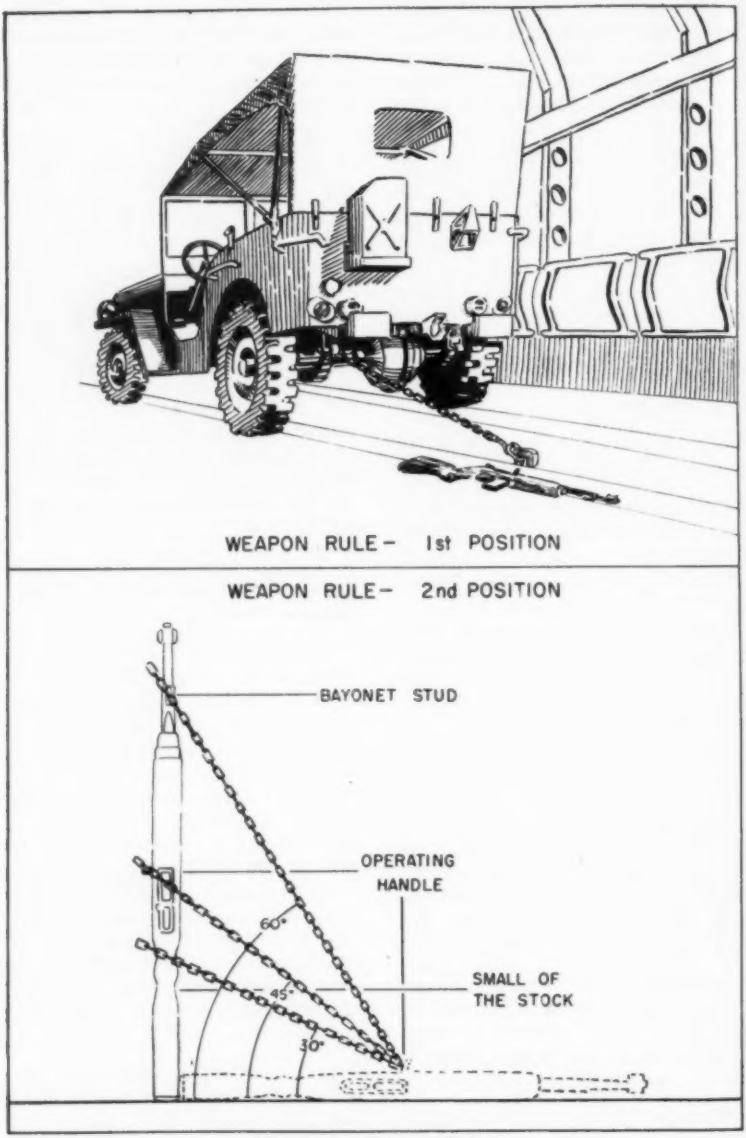

Figure 3. Weapon Rule.

an M1 or a carbine for the Weapon Rule, Joe. The rule works exactly the same with each one. Look here, now. We'll call this spot a tie-down ring in an airplane floor. Now I lay the weapon on the floor with its operating handle next to the tie-down ring and the heel of its butt under the lashing (see Figure 3). Then I just raise it up until it stands on its butt plate. Now if the lashing passes by the weapon's operating handle, the angle that lashing makes with the floor is 45°; if it passes the small of the stock, the angle is 30°, and if it passes the bayonet stud the angle is 60°.

"That process gives me a quick and accurate check of my vertical angle, using a piece of equipment always available during air moves.

"Once the vertical angle is known, it is easy to estimate the horizontal angle with sufficient accuracy, because the eye has a known angle to compare it with."

"But do we expect a man to check the angle of every lashing that way?" Jackson asked.

"Definitely not, he'll use the rule to check one or two, and that will tell him that the over-all job is close enough. Now, have you got all that?"

"Yes, I think so, sir," the captain replied tentatively, his pencil racing across the page, "though I may have to ask you to check me when I look over my notes later. What else should I know?"

"There's a problem of tie-down rings. It can get complicated as all get-out in some airplanes, and I don't want to confuse you with a lot of details you won't want to teach. But here's one basic problem — every tie-down ring is rated to hold a pull of a certain number of pounds, but some tie-down rings will hold the rated amount of pull only when the lashing is attached at certain angles. In the C-119, for example, a tie-down ring which is rated as capable of sustaining a pull of 5000 pounds will do so *only* if the vertical angle is 45° or greater! If we use a 30°-30° lashing in this airplane the capacity of the tie-down ring is reduced to 3500 pounds. You remember the old saying about a chain being only as strong as its weakest link? Well, it's true here too, and if you attach a 5000 pound capacity lashing to a ring that can hold only 3500 pounds *at the angle used*, the result will be that after more than 3500 pounds of stress is applied to the lashing the ring will come out of the floor. Obviously, then, you can't figure that lashing at full efficiency. One bright spot in the picture is the fact that the new assault transports, the C-122 and C-123, have rings that are rated the same, 10,000 pounds, for all directions. The important thing to remember, though, is that you should ask the Air Force for accurate data on each type ring in each type plane that you expect to use. Check to see that the information you're given is up-to-date. Many cargo airplanes have been considerably changed since delivery from the factory, and often the heavier capacity tie-down rings have been removed or covered by new flooring.

"And remember, it's the *ground force* unit's responsibility to tie things in tight, so don't assume that anybody else will check any de-

tails. We got all set for a movement in C-54's last year and found out at the last minute that the Military Air Transport Service planes we would use had no ring in them stronger than 1250 pounds, although TM 71-210 states that C-54's have 8000 pound and 10,000 pound rings. So, although we had figured the strength of each rope as 2,000 pounds, it could now hold only 1,250 pounds before the ring it was tied to would come out of the floor. Fortunately, by heroic efforts we were able to scrounge a lot more rope and were able to tie everything down safely."

"I'll bet the S3 office was ankle deep in sweat for a while there," Joe grinned.

"Amen. Now, for a change, here's something you don't have to teach: How to tie the ropes or to fasten and tighten the various types of webbing, chain, and cable lashings, because that's included in another class. Oh, by the way, that reminds me of another point you may be questioned about. There is a belief — quite prevalent in some air movement circles — that a lashing running from a tie-down ring over a smooth, rounded surface on the equipment (such as an axle) and then back to the same tie-down ring can sustain a force of double its rated strength, because there are two strands of the lashing instead of one holding the equipment to the airplane. It's a very logical idea and theoretically sound; the trouble is that it just isn't so. Tests at Wright Field have shown that while such a 'double' lashing will sustain more thrust than a normal 'single' lashing, the amount it will hold varies, depending on the type of surface over which it is passed, from a minimum of only slightly more than the rated strength of a 'single' to a maximum of somewhat less than twice its strength. Since we can never be sure exactly how much stress a lashing placed like that will bear, for safety's sake, we have to count it as being the same as a 'single'."

"Yes, sir — now if you're just digging up things to help me fill out my time, you needn't dig another foot," said Jackson earnestly, "I won't need a bit more to fill up my 3 hours."

"I thought you wouldn't be too hard to satisfy," the major grinned, "and I've got just one more thing. Up to now, we've talked only about tying down equipment. There is another type of load that we sometimes have to tie-down — a bulk load of supply containers."

"Yes, I heard something about that from my Air Force friend," the captain broke in. "He said that kind of a load isn't much of a problem, and I guess they had plenty of experience with stuff like that in the airlifts."

"That's right, Joe — almost all your tie-down problems exist in the field of vehicles, guns, and other heavy rolling equipment. However, you have to know what to do with other items, such as chests of various types, cartons and boxes of supplies and ammunition, water cans, and sometimes even kitchen ranges. A few basic principles are enough to take care of all such loads. The first — always use a cargo net if you can get one. Simply throw it over the load (after stacking whatever con-

tainers you have in a neat, compact pile) and then use ropes to tie it securely to rings in the floor on all sides. Such loads are almost always so light (in comparison to their bulk) that tying on enough ropes to secure the load firmly will provide ample protection against all thrust forces. If you can't get a cargo net, use plenty of rope, making sure that you tie ropes around the stacks and then across the tops of the stacks to lash them to the floor. (See Figure 4.) The ropes over the top of this pile will hold *either* forward or rearward thrust, so we compute only the number of ropes we need for forward thrust (on the 45°-45° basis). Again, however, we usually need more ropes just to secure the stack firmly than are necessary for forward thrust."

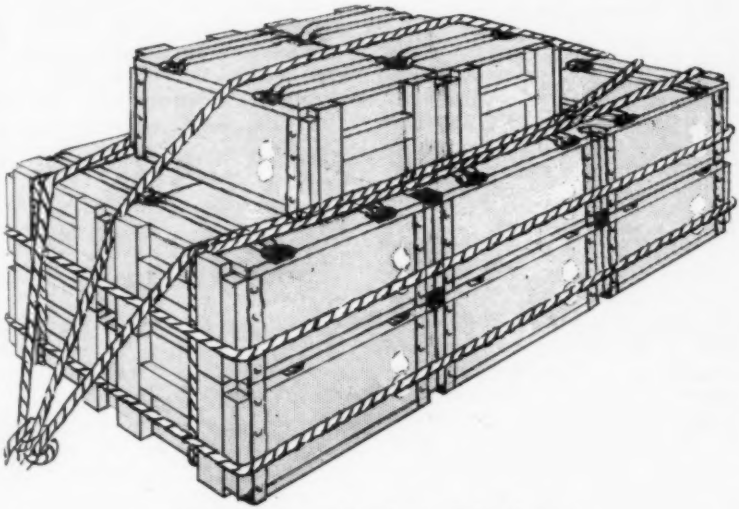

Figure 4. Ammunition boxes tied with rope.

"As I get it, then, tying down lighter stuff like this is just a matter of using common sense and throwing in a couple more ropes if there's any doubt."

"Exactly, Joe, I couldn't have put it better."

"Does that cover the field, Major?" Jackson asked. "If so, I'd like to check over the rest of my notes with you to see if I've got it all."

"That's all I can think of now," the S3 replied. "Shoot."

"Here they are:

"The Weapon Rule

Lay an M1 or carbine on the floor, *operating handle next to the tie-down ring, heel of the butt under the lashing.* Raise it up on its butt. If the lashing passes by the —

SMALL OF THE STOCK, the vertical angle is 30°

OPERATING HANDLE, the vertical angle is 45°

BAYONET STUD, the vertical angle is 60°

"The Tie-down Ring Problem
Some tie-down rings will not hold their full rated strength if a lashing is attached at a vertical angle of less than 45°. Always check with the Air Force to be sure before planning a move.

"The Double Lashing Fallacy

No lashing can be considered as being worth more than its rated strength, even if it's doubled over an axle or gun tube — Wright Field tests.

"Tying Down Chests and Boxes

1. Always use a cargo net if you can.
2. Use plenty of rope to insure that the load does not shift. On heavy items, such as ammunition, check to see that the lashings will hold forward thrust."

"That should do it, Joe — and don't forget; give 'em plenty of practical work."

"Death was the penalty for turning back during an action without an order — as it was for failing to give aid to an injured squad mate and for neglecting to pick up any equipment dropped by a front file man." **From: *The March of the Barbarians* by Harold Lamb, copyright 1928, 1940, 1941 by Harold Lamb, reprinted by permission of Doubleday & Company, Inc.**

THE RIFLE PLATOON BELOW ZERO*

By LT JOHN P. VOLLMER, Infantry

*The information contained in this article is the result of the author's own experience in Korea and is not intended to be a complete treatise on cold weather operations. More detailed information for survival in extreme cold weather is contained in FM 70-15, *Operations in Snow and Extreme Cold*, and in the Pamphlet, "Cold Facts for Keeping Warm," dated Sept 1950 published by the Office of the Quartermaster General.

This article is written for the men who, under adverse cold weather conditions, will lead rifle platoons and companies against any future enemy of the United States.

* * * * * *

The forces in Korea last winter were blessed with a good many officers who had seen combat in Europe during World War II. While their suggestions helped materially to cut down cold weather casualties, few of these officers were found at platoon level.

The result was that inexperienced platoon and company officers had to shoulder the job of keeping their men functioning in the bitter weather that prevailed in the frozen hills of that Oriental icebox. To them should go much of the credit, or discredit, for the good or bad records made by their units in fighting the effects of sub-zero temperatures.

The notes that follow are for the benefit of officers and men who may find themselves in situations similar to those experienced by my platoon and adjacent units.

COLD WEATHER MOVEMENT

The 17th Infantry, 7th Division, first encountered the cold weather of a Korean winter in October at Iwon on the east coast. From that time until well along in December the cold grew steadily worse as the division fought its way north to Hysan Jin, on the Yalu River, and then retraced its route in the retreat from the Yalu.

During this period there was a great deal of foot movement by the officers and men of the 17th and it was discovered by the inexperienced that cold weather presented many problems with which they were ill-prepared to cope. Frozen feet, noses, and ears; cold vehicle engines; and icy "C" rations were just a few of the hardships caused by the weather.

One of the biggest problems was the case of the "unhappy feet." Long marches and bitter cold combined to keep battalion surgeons of the 17th very busy. Climbing and walking under heavy loads caused profuse sweating and subsequent freezing, which, in a short time, put everyone's feet in bad shape.

The S-4 of the 17th did his best to keep the men equipped for this weather. Shoe pacs were sent up to the men as soon as possible. They helped materially. An odd situation arose, however; many men could not wear the shoe pacs as they were

too hard on feet. For many a doughboy, walking in these rubber boots proved very difficult. On the other hand, some swore by the shoe pacs and a controversy arose that lasted all winter. It was argued that the shoe pacs were too heavy and awkward, gave no support to the foot, and caused excessive sweating; on the other hand the boot was too cold, and it was not resistant to moisture. The solution arrived at by most commanders was to let the men wear what they wanted, if it was at all possible.

The old rule of a ten-minute break every hour was often discarded by the more experienced units. A shorter break given more often cut the periods of waiting during which men stiffened up from the cold, and reduced the length of active periods that produced sweating in the heavy cold weather clothing. Whenever possible, the rifle platoons of the 17th, after climbing to a high ridge carrying heavy equipment, would stop briefly to dry sweaty clothes and boots. Sometimes this was not feasible tactically, but when it was it aided the men greatly.

During movement, it was frequently difficult to eat "C" rations since they were often frozen solid. This was a very noticeable hardship on troops who were working hard and losing much of their body heat to the cold weather. The small Coleman stoves came in very handy to heat the food, especially when moving in vehicles; otherwise, ice could be kept out of the food cans only by carrying the ration next to the stomach. Body heat at least prevented icing of the rations. Of course it is not a comforting thing to have a large lump of cold metal next to the stomach when the weather is very cold, but it's a lot better than going hungry during an extended march.

Vehicles were another problem. They, of course, had antifreeze in them, but frequently after long periods of inactivity they would not start. It became necessary to run up the engines of inactive vehicles for ten minutes out of the hour night and day. This was the only satisfactory solution found to this problem.

COLD WEATHER CLOTHING

The Quartermaster has developed some very satisfactory cold weather clothing. The exigencies of war, shipping, and supply, however, often caused delay in getting these items to the troops. So it was with the 17th.

During the early stages of the Iwon landings the men were often without proper clothing. This was soon remedied, but not until a few pointers had been learned about how to make ordinary clothing warmer.

It seems that ordinary clothing permits loss of a great deal of body heat by way of the collar and openings at the upper chest. A GI towel or piece of heavy cloth wrapped around the neck prevented loss of much warmth.

The glove, seemingly a minor item, can literally be a life saver. Several men in Able company of the 17th Infantry found that the loss of a glove in sub-zero weather quickly made them virtually helpless. Glove loss was cut by tying them to a string and wearing the string around the neck.

The sleeping bag is the soldier's clothing when he is resting. It is something he should take care of and not abuse as a pillow during brief periods of inactivity. A sewing kit seems like a small item, but there is more than one veteran of the 7th Division who wishes he'd had one to sew up rents in the sleeping bag cover.

Called many things, the bag, sleeping, mountain, could be a killer, too, if not properly used. Tired men who crawl into a warm sleeping bag are not alert soldiers, and if zipped completely in, are virtually helpless. This was found out too late by one unit attached to the 7th Division. One morning a unit guarding a mountain pass lost 70 men, many of whom were found dead still zipped in their sleeping bags. The solution here was constant checking by squad leaders, platoon sergeants and platoon leaders. Men simply could not be permitted to zip themselves in and become, warm, cozy, and sleepy. If the arms were out of the bag, the soldier was in a better position to get into action quickly. It was less comfortable that way, and it took forceful action by small unit leaders to compel men to use their bags in this manner, but men are now living who would be dead if they'd stayed warm last winter.*

COLD WEATHER IN STATIC POSITIONS

The front line rifleman has it best against the weather when he is in a quiet position and can find shelter from the cold. Often, however, when in a quiet position, the riflemen of the 17th had to maintain lines and be exposed to the cold a great deal of the time. In situations like that, warming rooms to which the men go for brief spells to dry clothing and clean weapons are a great aid to morale and efficiency. Tents can be used as warming rooms but it was a rare occasion in the 17th when tents were available for this purpose. Generally, Korean houses in the neighborhood were kept warm by a small crew for the whole group. These warming rooms had to be run on a strict schedule, however, or the men tended to gather there and reduce the strength of the ground positions.

THE PLATOON LEADER

All of the above methods of helping platoons through cold weather are useless if the platoon leader does not see that the men take care of themselves. It is not enough to tell cold, miserable men what to do; the officer must see that they do it.

The cold is never pleasant, but there is no need of being afraid of it. If the small unit leaders, the 1542's, will check those small details, the unit will not only get the job done, but will come out of it a happier and healthier group.

There is the case of a platoon leader who checked his men's feet every day, requiring his runner to write down the names of the men inspected. The platoon did not lose one casualty to the weather until

*The Infantry School has been advised that other divisions in Korea tackled this problem of keeping men alert by issuing sleeping bags on the basis of one bag per two men. This system increased the probability of having one-half the strength awake at all times.

the runner was evacuated with trench foot. It seems that the officer failed to check the runner's feet. There is a clear lesson here.

If any principles can be derived from the diversified facts recorded here about the operations in North Korea, they escape us — unless you conclude that common sense and a sense of responsibility must be especially peculiar to the rifle platoon leader in weather below zero.

"The one indispensable element in the winning of wars is the doughboy with plenty of guts, a stout and courageous heart, and his rifle and bayonet."

— General Mark W. Clark, Chief, Army Field Forces

SECURITY DURING MOVEMENT

By LT COL LYMAN S. FAULKNER, Infantry

Each day the news from Korea continues to emphasize the need for well planned, well executed security measures during troop movements in the combat zone. We all know that *security* is a principle of war and that all service schools emphasize it — yet many of the casualties of the Korean war and all other wars have been the direct result of someone's failure to understand, to plan, and to apply the proper security measures.

What is our security doctrine? Simply that each commander is responsible for the security of his command at all times and that he must base his security plan on the situation confronting him. Simple enough — just common sense you say? Very true, yet much more difficult to apply than explain. There is no crutch in this doctrine — no rule of thumb like the "deploy your unit when you come within range of the enemy artillery" used before World War II. It is strictly the commander's problem now.

In the early fighting around Chinju, a battalion was moving up behind the leading elements of the regiment to take part in an attack. Apparently there was no need for security, yet the battalion was surprised by an enemy roadblock. While the battalion was reducing the roadblock and reorganizing, the regimental commander had no reserve; momentum of the regimental attack was lost at the crucial moment.

There is another side to this picture. During the Battle of the Bulge in World War II, General Patton violated security regulations by rushing his columns across France at night with all lights blazing. Consequently, his units arrived in time to limit the enemy advance.

The lesson of these two contrasting examples is that each commander has to make his own estimate of the situation confronting him and plan his security accordingly. Once the needs of the hour are determined in approximate order of importance, the commander can decide what security measures are required. This quote from FM 7-20, *Infantry Battalion*, emphasizes the need for evaluating the importance of all the concurrent requirements.

"To slow or restrict the movement by adopting security measures not warranted by the situation is an error second only to failure to provide security consistent with the enemy threat." (par. 121.)

What are the factors the commander must consider in evaluating his requirements for security? The *mission* is the prime consideration.

A unit in a movement to contact has to arrive promptly at the prescribed place and in condition to fight. The specific mission may be stated as a march objective, an assembly area, or merely "advance down this road until you make contact."

Next is *enemy situation.* Is the front stable or fluid? Is little or much known of enemy dispositions? What are the enemy capabilities?

At the opening of the Bulge offensive in Europe, the Germans had shattered elements of two American divisions. Behind the advancing spearheads, a German unit was moving in a foot column down a shallow valley. The German commander apparently assumed that there were no effective American forces within striking distance and that there was no need for flank security or reconnaissance. His entire column was marching and making no move to protect itself.

Unknown to the German commander, two battalions of our 80th Division were moving in on his flanks. The American battalion commanders had correctly evaluated the enemy situation and their units were moving in an advance guard formation. Their lead elements reported the enemy column and the battalions quietly deployed while fire plans were coordinated. On signal everyone opened fire — range 150 yards. Obviously, the German commander had grossly misjudged the enemy situation and completely overlooked our capability for counterattack.

While considering the capabilities of the enemy forces, we cannot overlook the capabilities of guerillas, infiltrators, saboteurs, espionage agents, and unfriendly natives.

The next factor affecting security requirements is the *friendly situation.* Are there friendly units to the front *and* friendly units on the flanks? If so, what is their condition and effectiveness?

During the early fighting in the Philippines, shortly after the Japanese landing at Lingayen Gulf, an American regiment was ordered into a reserve position twenty miles behind the fluid American defense line. At the end of a long forced march the commander halted his dog-tired men on the new position. Believing the enemy was still twenty miles away and that he was adequately covered by friendly forces, the commander told his units to get a good night's rest and not to worry about establishing guard posts. But an enemy column had already penetrated our front lines. Before dawn, it swept through the regimental area effecting complete surprise. The regimental commander had not only misjudged the friendly situation, he had failed to provide even stateside interior guard.

The next factor, *method of movement,* is a mechanical aid which will affect both control and security measures. It means — what, if any, transportation is available for the movement.

In evaluating the factor *terrain,* we are primarily interested in the critical features near the route of march — adjacent high ground, possible ambush areas, parallel and intersecting routes and, of course, the condition of the march route.

The *time* factor, as affected by the mission of the unit, may compel

a reduction of the security measures indicated by the other factors. If we have been ordered to "get cracking" to seize critical terrain or to save a deteriorating situation, we may have to take a calculated risk, reduce our security measures, warn all elements what to expect, and get going. The right time analysis and the resulting security measures may mean the difference between the commander's promotion and a reclassification board. Here is how fine one commander cut it.

In the Battle of the Bulge, the 101st Airborne Division had begun to arrive in Bastogne at midnight. One regiment was ordered to move out at dawn and seize a road junction nine miles to the east. The regimental commander issued his order, then, to speed the movement, advised the lead battalion commander not to put out flank security for the first five miles. Shortly before the five miles were up, the lead unit made frontal contact with advancing Germans and established a line that held until the German offensive was stopped. If the time factor had not been properly evaluated the regiment might never have reached favorable ground.

If the commander is to have sufficient information to properly evaluate the factors we have discussed, he has to make full use of his own information - gathering agencies — his intelligence and reconnaissance platoon, liaison officers, communication with higher, adjacent and lower headquarters, army aircraft when available to him, his intelligence section, and patrols dispatched from subordinate units.

Let us now consider the specific means the enemy can use to interfere with our movement.

(1) He may attack our columns with aircraft weapons, long range missiles, and long range artillery fires.

(2) He may engage our columns with guerillas, infiltrators, or airborne units.

(3) He may engage our columns with his conventional ground forces and their supporting weapons.

With these possible threats in mind, consider the guards against them. Our own air force is our main safeguard against the first threats, but even when we enjoy a high degree of air superiority, it is possible for enemy fighters to range far, in ground distance, behind our lines to harass our vulnerable columns. Active protection against such a threat is obtained by distributing our antiaircraft weapons throughout our columns or by massing them at vulnerable points along our route of march. With our machine guns and even with rifles, we can discourage enemy pilots from diving in close for accurate low level strafing and bombing attacks. For passive protection, we may use concealed routes or move at night. Use of open column formations will reduce the effect of air attacks yet not interfere with the speed of individual vehicles.

Control of enemy guerillas is a responsibility of the theater commander, but in many instances the column commander can only expect to be apprised of possible guerilla action against his column.

He must then provide security as he would against conventional forces. The same applies to enemy airborne forces. Once the enemy force has landed, it must be dealt with as any other ground threat. The possibility of an airborne landing varies according to relative air

as that ground movement in the theater of operations preliminary to combat for the purpose of placing troops in position to engage the enemy. During a movement to contact, the commander must continually balance requirements for speed, maintenance, and rest

MOVEMENT TO CONTACT

PHASE	COMMANDER'S ESTIMATE	TYPE FORMATION	GOVERNING CONSIDERATIONS
1	CONTACT REMOTE	ROUTE COLUMN	ADMINISTRATIVE
2	CONTACT IMPROBABLE	TACTICAL COLUMN	TACTICAL AND ADMINISTRATIVE
3	CONTACT IMMINENT	APPROACH MARCH	TACTICAL

Figure 1. Phases of movement to contact.

superiority, enemy airfields, and airborne troops available.

Security measures against enemy ground forces vary as the phases of movement to contact.

The commander's estimate forms the basis for determining the security measures and formations in a movement to contact. The phases and type formations have been redefined as a result of World War II experiences to allow you, as commander, more flexibility, to aid you in calculating the risks involved, and to provide you with tools to help determine what specific formations and security measures to adopt.

Movement to contact is defined

against the requirements for control and security from possible enemy action.

During Phase I (see Figure 1) the probability is *remote* that contact will be made with enemy ground forces. This phase takes place in rear areas that are protected from enemy ground interference by other friendly forces. Since administrative measures and conservation are the main considerations, we may break up our organic tactical unity for speed and ease of movement. The type formation used is *route column.* When our unit is to move in this formation, the higher commander usually indicates his estimate of the situation

by furnishing rail or motor transportation. However, the action of the higher commander in no way relieves any column commander from taking appropriate security measures.

Contact improbable is the estimate of the possibility of enemy ground interference during Phase II, since this movement is also covered by friendly forces. The difference is that we are now close enough to the enemy to anticipate the probable employment of our forces. We must now temper our desire for speed and rest with additional security measures. We move in a tactical column and our considerations are both administrative and tactical. In the tactical column, organizational unity is maintained and supporting elements frequently are placed according to their expected order of employment. During this phase, we are not as concerned with a surprise ground attack as we are with preparations for the orderly occupation of an assembly area or defensive position.

While we are en route late information may indicate that contact is imminent and that a change to an approach march type formation is necessary.

When *contact is imminent* we are in Phase III of movement to contact. This is not an attack. We are moving forward to a march objective but we may encounter enemy ground forces at any time, including effective guerillas, even though we may have reconnaissance elements to the front. The presence of guerilla forces capable of interfering with our column may make contact imminent anywhere in the theater although the theater commander is responsible for the measures required to subdue and control guerillas. When there is the imminent possibility of contact, speed is further tempered by security measures and need for control is great. We now partially deploy our column by sending out appropriate forces — advance guards and flank patrols. We may deploy our column still further, if required. Tactical considerations govern and our move is in an approach march formation.

To explain the appropriate security requirements, we have set up a theoretical situation in the locale of Korea (see Figure 2). Our forces are engaged slightly above the 38th Parallel. I and II Corps are advancing generally along the line below Yonchon through Hwachon. X Corps is advancing slowly along the line Hwachon-Hwangpo using the more lightly armed ROK forces in the mountainous terrain. Guerillas have been eliminated from the western portion of the peninsula but in the more mountainous eastern section isolated groups are still active. United Nations air forces have established air superiority but enemy forces are putting up an average of forty sorties daily.

The 4th Division has arrived at Pusan and is preparing to move to Seoul. Contact with enemy ground forces is remote and this movement can be made in route column. Tanks will move on flat cars, troops will move by another train, and vehicles will travel by road.

Having arrived at Seoul, the 4th Division is now ordered to an assembly area near Inje preparatory to assuming the mission of one of

the X Corps units in the line. Although the division is now closer to the enemy, contact is improbable hence the movement is made in tactical column. The primary reason for adopting this formation is the need to prepare the regiments to assume combat missions on arrival at Inje. The order of march is according to the order of anticipated use. Since the route would be adequately covered by the advancing Corps there would be no requirement for security patrols.

The two phases of movement to contact that we have discussed thus far are strictly covered movements — our columns have been protected by friendly forces against the enemy ground forces. However, our column commanders do not neglect the security of their columns. Liaison officers are dispatched to keep the commander informed of the situation ahead; guides and quartering parties make the movement rapid and efficient. Machine guns and antiaircraft weapons prepare to fire on enemy aircraft. Motor vehicles and serials maintain appropriate distances. Air warning guards are appointed and each vehicle has one man, other than the

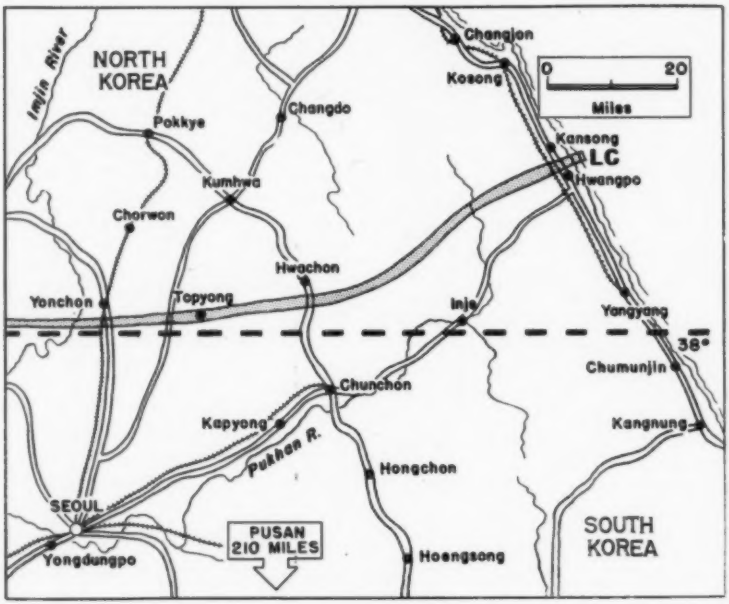

Figure 2. Theoretical situation in Korea to illustrate considerations governing formations used during movement to contact.

driver, ready to alert the other passengers to any change in instructions and to guard the vehicle during halts. These are basic security measures taken during all tactical movements.

In the division assembly area at Inje, the division commander learns that X Corps has continued to advance slowly and now holds Kansong with one reinforced regiment that his forces are to relieve. He orders the 8th Infantry, reinforced with the 29th Field Artillery Battalion and Company A of the 4th Engineer Battalion to effect this relief.

Colonel 8th Infantry must determine what formation and what security measures are most appropriate for the move across the mountain range and up the coast to Kansong. If there is still no immediate ground threat to the security of his force, Colonel 8th Infantry may elect to move the entire distance in tactical column with only sufficient reconnaissance forces (intelligence and reconnaissance platoon and army aircraft) to keep himself informed of possible changes in the situation en route. He may elect to send with his reconnaissance elements sufficient rifle and tank forces to secure the mountain passes, key bridges, and his new assembly area against guerillas and small bands of infiltrators. In this manner he can still move his main body with maximum speed and minimum fatigue. If the situation changes en route he can quickly adopt an approach march formation.

If conditions indicate that contact is imminent with enemy ground forces that can effectively interfere with his movement, he should adopt an approach march formation. In the approach march the column deploys sufficiently to protect itself against enemy action. Normally this deployment is limited to the designation of advance guards and the dispatch to the front and flanks of patrols strong enough to hold off enemy forces until units within the column can assume combat formations. These patrols are basically infantry squads or platoons provided with communication reinforced with tanks, mortars, machine guns or recoilless rifles as indicated by the terrain and the possible threats.

Organization of the Advance Guard

Figure 3 illustrates a typical formation for the advance guard of a regiment. Usually a battalion reinforced can perform such a mission. Appropriate reinforcements are a platoon or more of tanks, a platoon of 4.2-inch mortars, and a platoon of engineers. The advance guard battalion forms the *reserve* of the advance guard and it is preceded by the *support*. This is a company reinforced with at least one platoon of tanks and an appropriate number of 81-mm mortars, machine guns, and 75-mm rifles from the heavy weapons company. The support in turn is preceded by approximately one-third of its force — *the advance party*. This is usually an infantry tank team consisting of an infantry platoon and a tank platoon. In dismounted formations, a point precedes the advance party. This point usually is a rifle squad. If reconnaissance forces are available, they depart far enough ahead of the advance guard to reconnoiter inter-

secting roads and key terrain along the march route. The reconnaissance elements usually operate under the control of the regimental or higher commander. In the absence of these elements, the battalion commander may improvise his own motorized reconnaissance detachment.

The general mission of the advance guard is to protect the main body against enemy ground action

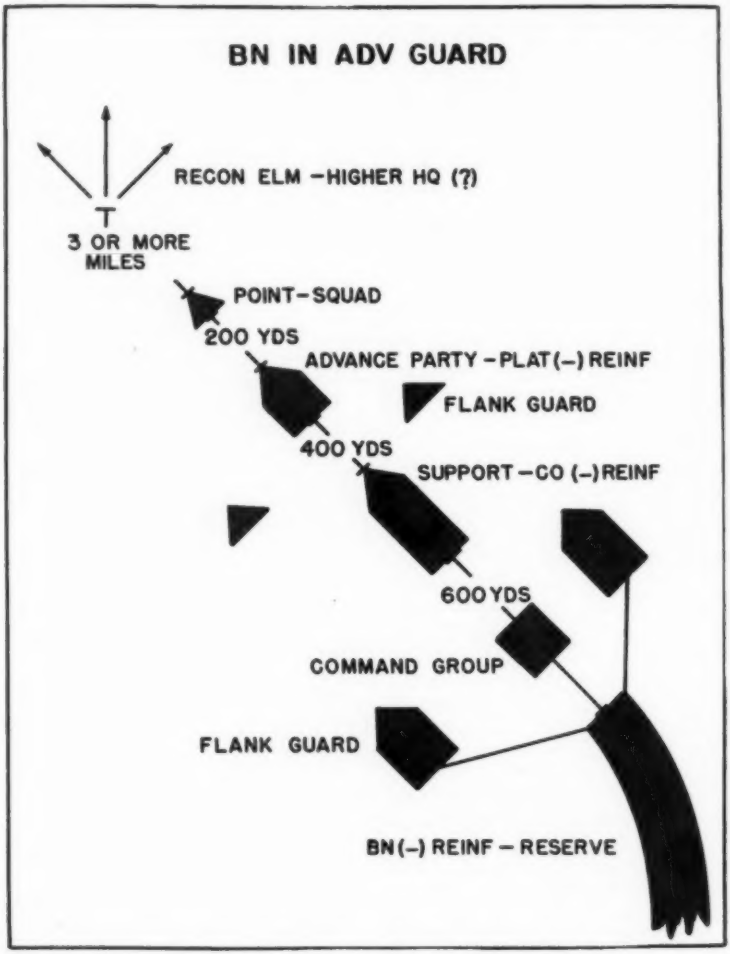

Figure 3. Typical formation for the advance guard of a regiment.

from the front and to prevent unnecessary delay. Since a combat-wise enemy may conceal forces from the reconnaissance elements, the advance guard, either motorized or on foot, is always ready for action. It aggressively engages all enemy forces, destroying small forces and attacking larger forces to develop their strength and dispositions. When the support company engages a small enemy force that it can contain, but not immediately overcome, the advance guard commander may designate a new support company and continue the march leaving the original lead elements to eliminate resistance.

The support and reserve of the advance guard normally send out flank patrols for their own protection. These may move parallel to the column, along ridge lines or roads, or may proceed from point to point. Where adjacent terrain is difficult, new patrols may be dispatched from the head of the column as the next critical terrain feature appears.

The distances between elements indicated in Figure 3 are guides only and will vary with visibility and terrain conditions. Each distance should be enough to give the following element space to deploy and maneuver without being caught in the same fires as the one that precedes it.

Every infantry unit should establish its own SOP formations for movement to contact. These formations should be adapted to the terrain and the tactics of the enemy in the theater of operations. Many units in Korea have found they have to move strong forces on ridge lines paralleling the routes of advance since the enemy habitually occupies high ground and fully exploits the trails that run along most ridges.

If the composition of the SOP formations is known by all members of the command, the commander can readily issue orders by modifying the type formations to fit each specific situation.

"Security and control during a tactical movement depend upon continuous receipt of timely and accurate information."

— FM 7-20, *Infantry Battalion*

WOODEN WORKING MODEL— THE CARBINE

By MAJ FREDERICK H. BLACK, JR., Infantry and
SFC COATS BROWN

Teach weapons functioning with wooden working models and you take the mystery out of the subject.

Without a model to watch, some soldiers without a good understanding of mechanics find it difficult to grasp the functioning of the parts of a weapon. A few will strain their imaginations, trying to picture this action in their minds; but others in the class will be lost, even though they conscientiously want to and try to understand. The use of models reduces the requirement for frequent repetition of the instructional material.

Thousands of students at The Infantry School started on the road to expert knowledge of small arms through observing wooden working models of the weapons.

A working model of the carbine is covered in this article.

The model of the carbine includes only the moving parts of the automatic mechanism, hence it is used to discuss functioning when the weapon is fired automatically. (See Figure 1.)

Detailed dimensional drawings will help you construct the model. It is built to a scale that makes it large enough for use with classes up to 200 students. (See Figure 1.)

When you build a working model, it will be more effective if:

(1) Each part is painted a distinctive color. For easy differentiation, paint adjacent parts in contrasting colors.

(2) The model is constructed accurately and to scale.

(3) Hardwood, such as oak or maple, is used for those parts subjected to strain.

(4) Screws instead of nails are used in assembling the model. (Nails can be used in constructing the model stand and backboard.)

Material consists of lumber (scrap material, for the most part, is satisfactory), nails, screws, easily constructed hardware, and a few lengths of ordinary screen door spring.

The working model is not constructed exactly as the parts it represents. For simplicity of construction, some parts and details are eliminated. However, nothing essential to a complete understanding of functioning is missing.

The carbine working model is much simpler than that portion of the weapon that it represents. Designed purely to show functioning

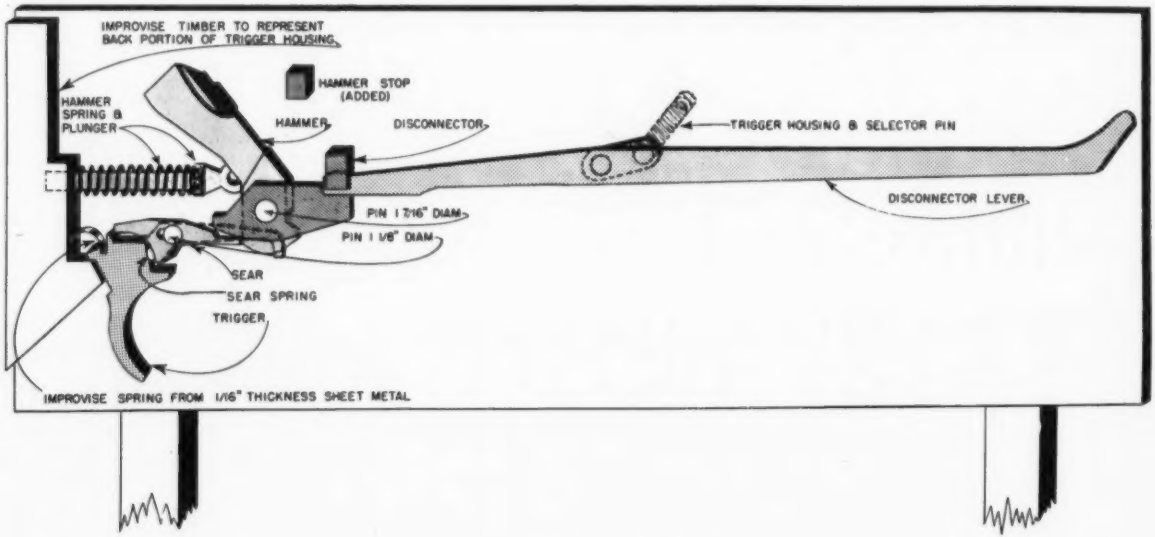

Figure 1. Carbine training aid.

of the automatic mechanism, it lacks some of the refinements of the weapon itself. (See Figures 2, 3, and 4.)

Some of the features not shown on the model are:

(1) The selector. Since this is located on the left side of the receiver and the right side of the weapon is shown, the selector is not shown on the model.

(2) The disconnector spring and plunger assembly. Since this part is not included on the model the functions of this assembly are simulated.

(3) The operating slide is not shown as a working part but it is painted on the backboard.

The moving parts of the carbine model are: the disconnector lever assembly, disconnector, sear, and the hammer spring and plunger. Most of the other parts are visible on the carbine itself and their action can be observed as conveniently on the weapon as on a model. In some cases parts, whose action is not essential to an understanding of functioning, are painted on the backboard.

The following materials are required for the carbine model:

1 — 1″ x 4′ x 8′ plywood for backboard

1 — 2″ x 4″ x 7′ (pine) for disconnector lever

8 — 1″ x 12″ x 8′ (pine) for hammer, trigger, sear, and disconnector

1 — 4″ x 4″ x 3′ (pine) for hammer spring plunger and pins

2 — 4″ x 4″ x 12′ (pine) for legs and braces

1 — ¼″ x 16″ steel rod for hammer spring

1 lb — 8 penny common nails

½ lb — 8 penny finishing nails

This carbine model may be used following instruction on semiautomatic functioning. Before going into the functioning of the parts, orient your class on the color scheme (i.e. "this part in *blue* is the hammer").

To start with, emphasize that the parts added to enable the carbine to fire automatically are down and out of the way of the operating slide when the selector is on the semiautomatic setting. As the selector is moved forward to the automatic setting, the trigger housing and selector pin rotate causing the crank to rotate. (See Figure 2.) The disconnector lever moves up bringing the parts in the automatic mechanism into play. Movement of the selector, the trigger housing pin, and the selector crank must be simulated since these parts are not included on the model.

Start your discussion of functioning by assuming that a cartridge has just been fired and the operating parts are moving to the rear. Illustrate on the model the action the disconnector lever takes as the operating slide moves to the rear and pressure against the forward end of the disconnector lever is removed. Operate the model several times to emphasize the action.

The disconnector lever is repositioned by the forward end of the disconnector. The disconnector is repositioned by the disconnector spring and plunger assembly which was compressed during the rearward movement.

The automatic mechanism does not enter the discussion again until during the forward movement. As

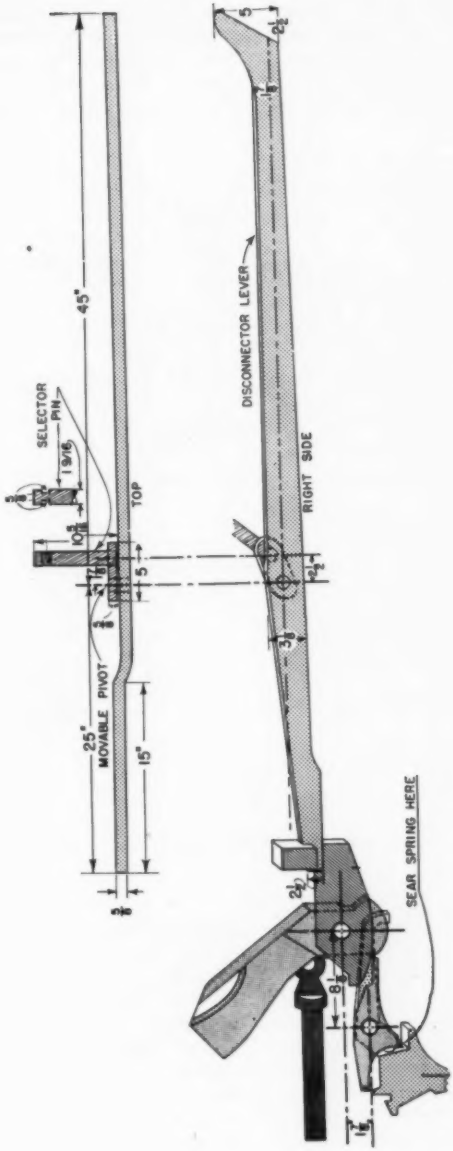

Figure 2. Drawing of carbine working model.

the operating slide moves forward, the cam surface in the heavy portion of the operating slide contacts and depresses the forward end of the disconnector lever. As the forward end of the disconnector lever moves down, the rear end moves up. Illustrate this action several times on the model by manually operating the disconnector lever. As the disconnector lever pivots about the trigger housing and selector pin, the rear end is raised and contacts the forward end of the disconnector. The forward end of the disconnector moves upward against the action of the disconnector spring and plunger assembly. All of these actions, except that of the disconnector spring and plunger assembly, can be shown on the model. The action of the disconnector spring and plunger must be simulated since these parts are not included on the model.

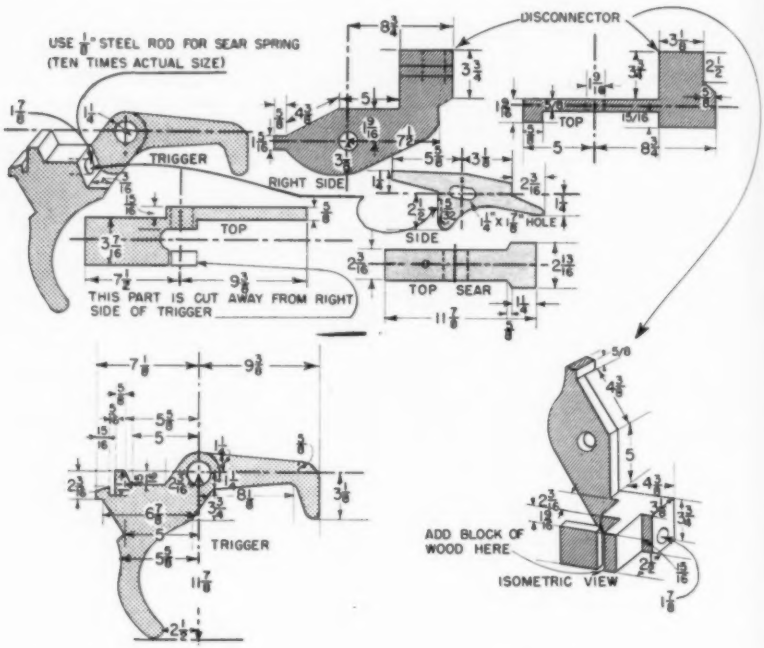

Figure 3. Detailed drawings for construction of carbine model trigger, sear, and disconnector.

The disconnector pivots on the hammer pin. The forward end of the disconnector moves up and the rear end moves down. The rear end of the disconnector operates on a

raised portion of the sear causing the sear nose to be disengaged from the hammer. The hammer now moves forward and fires the next cartridge. All of these actions except, of course, firing the cartridge, can be shown on the model. The parts are manually operated except the hammer which is driven forward by the hammer spring.

In using the carbine working model remember that a training aid is no better than its user — the instructor. Therefore, prepare yourself. Rehearse using the working model and this training aid will serve its purpose of assisting you in teaching.

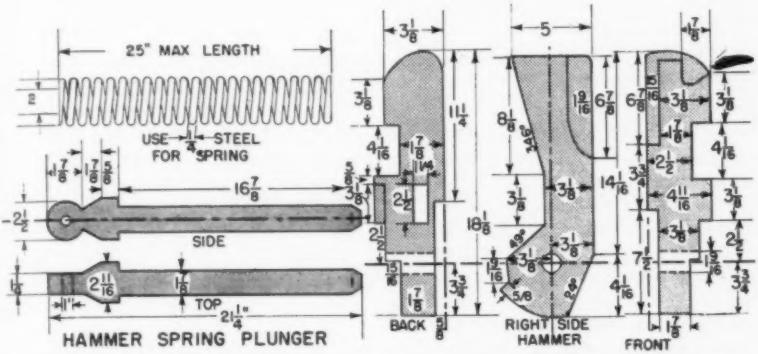

Figure 4. Detailed drawings for construction of carbine model spring, plunger, and hammer.

In our next issue of the *Quarterly* a 75-mm platoon leader tells how his weapons proved themselves time after time in action. Read *75-mm Rifle Platoon in Korea* and learn how the recoilless rifles have won their place on the Infantry weapons first team. It's coming in the January 1952 issue.

A HEAVY WEAPONS COMPANY IN KOREA

By CAPT CHARLES MULTOP, Infantry

The opinions expressed in this article are those of the author and do not necessarily represent current thought at The Infantry School.

When the 2d Infantry Division was alerted for shipment to the Far East, Company H of the 23d Infantry had good officer and NCO leadership. When we met the enemy, we discovered the value of that strong leadership when it is coupled with courageous, well-trained soldiers. The combination allowed the company to make an important contribution to the 2d Division effort in Korea.

TRAINING

My experience with a heavy weapons company in Korea proved conclusively that training pays off. Constant, never-ending, continuous training, whether formal or informal, in the United States or the combat zone, on the front line or in rest or reserve areas, pays off in the ability of the men to use their weapons, to gain confidence in themselves, confidence in their weapons and their leaders, and to assume greater responsibilities when called upon to step up in the chain of command.

On shipboard en route to Korea, the company trained to improve its physical condition and knowledge of military subjects. This training continued in combat and in reserve or rest areas. Whenever an officer or NCO could teach a man something, he did. If the battalion was in reserve, each company conducted training to improve its military efficiency, with emphasis on weapons, both in mechanical functioning and firing.

One important aspect of this training was the opportunity it afforded to evaluate and train potential NCO's. Since casualty rates among NCO's were high, every man who had the qualifications had to be trained to do a noncom's job, and to feel the sense of responsibility that a good noncom must have.

But enough of generalities. Here are my own experiences and observations gained in Korea. They point out some practices that you may find valuable in case of future combat with a similar enemy

MACHINE GUNS IN DEFENSE

In setting up a defensive position, our rifle company commanders insisted upon having the attached machine guns in the best possible positions. Before deploying his riflemen, the CO of a rifle company would invariably ask the heavy weapons machine gun platoon leader, "Where are your machine guns going to be?" Only after hearing the answer to this question would he organize his defense. And al-

most always the defense was organized around the machine guns.

There were exceptions to this practice, of course, especially in our early days in Korea. However, it was not long before everyone realized that the best defensive position usually was built around the machine gun positions.

Our water-cooled caliber .30 was the "big boy." So great was our riflemen's respect for this gun that they welcomed it into their defense as if it were a "secret weapon" of unlimited capabilities. Its actual performance did not fall far below this estimate.

When defending a position for several days, the light machine guns also were manned, provided, of course, that the machine gun platoon was up to strength.

In the defense at night, machine guns were manned by full gun crews minus the squad driver. Three men stayed in the machine gun emplacement; squad leader, gunner, and assistant gunner. The remaining members of the squad were placed in foxholes on either side of the gun. Normally, there were two men in each foxhole, and always at least two men in the gun emplacement.

Usually the machine gun platoon was split, with one section attached to each of two rifle companies. The platoon leader would be with one section and the platoon sergeant with the other. Each of these leaders shared a two-man foxhole with either the messenger or radio operator. The section sergeant occupied a similar hole with a messenger. For control purposes, these two foxholes were a few yards to the rear of, and centered between, the two gun positions.

It was not good policy for the platoon leader or platoon sergeant to occupy a foxhole with the section sergeant. It was too easy for one round of enemy mortar or artillery fire to put two key men out of action.

When observation to the front was good in a daylight defense, the guns were placed on the forward slopes of ridges. Two men took turns manning a gun and observing for enemy movement, while the other squad members remained in foxholes on the reverse slopes where they were available when needed.

MACHINE GUNS IN ATTACK

The universal respect for the caliber .30 water-cooled machine gun held true in the attack as well as in the defense. Due to the far greater sustained fire power and greater accuracy, the machine gunners had more confidence in the water-cooled than in the air-cooled weapon. When getting ready to attack, it was standard procedure for the machine gunners to ask, "Let us take the heavy; we'll keep up." If their request was granted, they did keep up. They loved that heavy!

At times when the light machine gun was used in the attack, there was a tendency on the part of some rifle company leaders to think of the machine gun as an assault weapon. We had to caution the leaders of the machine gun platoon to be on guard to discourage this practice.

One of the best ways we found of using the heavy machine gun in

the attack was to deliver overhead fire, a method which, of course, had been proved in many battles prior to hostilities in Korea.

On 6 September 1950, our battalion was engaged in the Naktong Defense action. Company F was ordered to take a high hill overlooking the village of Poncho and commanding the surrounding area.* As machine gun platoon leader, I recommended that the section of machine guns supporting Company F deliver overhead fire during the attack. This recommendation was followed.

Before the attack, no enemy was visible on the hill being attacked, but as soon as Company F jumped off, several of the enemy popped their heads up over the ridge line. The machine gunners immediately went to work and delivered heavy fire against the top of the hill, each gun traversing half the width of the hilltop.

In 10 minutes of firing, the section put 3,000 rounds on the Company F objective. Just before the riflemen masked the machine gun fire, it was lifted. Company F still had a stiff fight to reach the top, but when the attack was successfully driven home, the company commander of Company F and his platoon leaders were unanimous in declaring that their attack would have failed if it had not been for the overhead fire from the machine guns.

75-MM RIFLES

We found that our 75-mm rifles worked fine against personnel, enemy gun positions, vehicles, and thin-skinned armored vehicles. Their best use was against personnel and gun positions.

Many times, especially when setting up a perimeter defense at night after a daylight motor march, we used the 75's very effectively on road-blocks. We placed the rifles in firing position, manned by gunner and loader, with the section sergeant near the gun positions. The remainder of the squad was dug in and deployed to protect the gun crew and to be available when needed. When possible, the guns of the section were placed so as to be mutually supporting.

When firing defensive fires, we found that the gunner should always keep the section sergeant informed of the ranges to various target areas previously fired on by the weapons. This enabled him to make a better range estimation to new targets for either or both rifles.

In the attack, our 75-mm rifles fired on targets of opportunity, and on targets located before the attack began. Typical targets of opportunity were machine guns, mortar positions, enemy OP's, and ammunition dumps; for, strangely enough, the North Koreans often set up mortars on ridge lines, and placed small ammo dumps in full view of our observers.

Whenever possible, we displaced the rifles on carriers by section. We found that the laborious process of hand-carrying exhausted the crews and dulled their enthusiasm for the job at hand.

81-MM MORTARS

In Korea, the 81-mm mortar con-

*Lt Col James W. Edwards covered this action in his article, "Naktong Defense," which appeared in the April 1951 issue of the QUARTERLY.

tinues to add to its excellent reputation. Ammunition resupply for the mortar kept supply channels busy, but the value of the weapon was such that no one minded hauling up the great quantities of ammunition we used.

In the defense, one forward observation party was assigned to each of two rifle companies. A party usually consisted of the forward observer and his radio operator. Frequently, the radio operator also had a sound-powered telephone connected to the gun positions.

Knowing through experience that both the North Koreans and Chinese attacked almost every night, the FO would adjust fire in daylight on likely avenues of approach. In our battalion, the artillery and mortar observers coordinated all final protective fires between themselves and the rifle company commander. This included the fires of the 81's, the 60's, 4.2-inch mortars, and artillery.

Incidentally, likely avenues of approach in Korea were often what in the States would be described as "unlikely avenues." It was not unusual for the North Koreans to attack over the highest part of a long hill that varied in elevation. On other occasions, they insisted on attacking through any depression or draw leading up a hill, even when these places were dotted with the dead bodies of their fellow soldiers. To accomplish his mission of fire support, the FO had to be in a position to shift his fire anywhere in his sector.

Protective fire was brought in as close to the front line troops as was consistent with their safety. In our battalion, the attitude was "We don't care how close in you fire those mortars, just so long as we know they're ours." The riflemen seemed to delight in hearing the fragments of the mortar shells whizzing by their foxholes, knowing that they were doing their work on the enemy and rendering him incapable of assaulting their positions.

In the Naktong Defense, many FO's became casualties, making it difficult for those remaining to adequately cover the battalion front. In many cases, the machine gun platoon leader or his NCO's served as mortar forward observers. This was possible because they were familiar with the procedure for adjustment of fire.

There is something to be said in favor of the World War II organization of the heavy weapons company, which had officers in command of the sections of the 81-mm mortar platoon. Although a forward observer is welcomed by the rifle company regardless of whether that observer is a noncom or an officer, the fact remains that when the section leader is a sergeant, his duties at the section must fall upon someone else when he goes forward to observe. A section sergeant acting as FO must leave his section in charge of a squad leader, who must turn his squad over to one of the squad members. If the FO is a squad leader, a comparable adjustment of duties is necessary.

This does not happen if officers are section commanders. They and the section sergeants can rotate as FO's, leaving one of them in command of the section.

During our attacks in Korea,

there was a forward observer party with each attacking rifle company. Since radios frequently operated poorly in the mountains of Korea, it was our policy to string wire if at all practicable. This involved much work, but we couldn't have operated without this additional means of communication.

COMMUNICATION

Warfare in Korea placed great demands on communication. We had to make sure that the communication sergeant continually checked the company radios, and that the radio operators had batteries.

All means of communication had to be available. With high mountains between sets, radios frequently failed to operate. We always ran wire from our machine gun and recoilless rifle positions with front line platoons to the heavy weapons company CP. If we were going to remain in position long enough, we would run two wires along different routes. During nights of heavy action, often radio and both wires went out. To contact our heavy weapons company in this case, our platoons used the rifle company's phone to battalion. When all radio and wire went out, we had to rely on our runners.

In this connection, make sure that your runner can think as well as run. The lives of your men often depend upon how well he can carry out his instructions and repeat information.

When there was not much action, there was often a tendency to let the phones lie idle until needed. Then, when they were needed badly, they didn't work. We instituted the practice of having all platoons call the company periodically to see if the wire was still in. Company also called the platoons at frequent intervals.

Contact within sections was not difficult to maintain because of the proximity of the men to each other. However, it was often difficult for these units to maintain contact with the company CP. This contact is important. The company commander wants to know what his platoons are doing. The platoon wants to know if company has any messages or supplies for it. The man in the platoon often feels abandoned when his platoon loses contact with its parent unit.

ATTACHMENT OF WEAPONS

We normally attached sections of machine guns and 75-mm rifles to the rifle companies in the defense and in the attack, although it was sometimes possible to fire the 75-mm rifles and machine guns in general support of a battalion attack. Except for FO's, the 81-mm mortar platoon remained under company control.

In a static defense, the heavy weapons company took care of resupply of all items required by its platoons, whether or not they were attached to the rifle companies.

When sections were attached to rifle companies in a fluid situation involving attack or retrograde movement, supply was handled according to arrangements made between the heavy weapons company commander and the rifle company commanders. Sometimes the rifle companies supplied these weapons sections and sometimes the heavy weapons company performed the

job. We found, through experience, that definite arrangements for supplying these attached units had to be made by contact between the rifle company and the heavy weapons company commanders.

Without contact between the weapons company and its units attached to rifle companies, the attached men felt as though they didn't belong to any unit. We found that, unless frequent visits were made by the heavy weapons company commander or his executive, the attachments began to feel as if they were fighting the war on their own.

Essentials, like blankets, cigarettes, and clean socks, reached the attached units through the heavy weapons company. The machine gun and recoilless rifle platoon leaders also had to provide their platoons continuously with batteries, spare parts for weapons, cleaning materials, and other supplies in addition to the daily essentials provided by the company. The company commander was able to anticipate some of these needs, but proper functioning of supply channels requires constant coordination between platoon leaders and the company commander.

KOREAN COMBAT HINTS

All weapons, individual as well as crew-served, must be continuously kept in condition for use. A soldier has to be made to realize that, although he is a member of a crew-served weapon squad, he may have to use his individual weapon.

Whether on attack or defense, we always needed a good supply of grenades. Our men soon learned the importance of this weapon. In the defense, enemy attacks were often beaten off by defenders well stocked with grenades.

Every night as we set up our defense, we checked on the number of grenades on hand and distributed these, trying to place around 12 or 15 in each foxhole or weapon emplacement. Riflemen and heavy weapons men were checked together on this in the front line. Once during this check, we found a soldier who had 80 grenades in and around his foxhole. He had overlearned the lesson.

There was a minimum of movement after dark in all areas. Activity on our part made it easier for the enemy to move about and infiltrate our lines.

We found that after several nights of enemy attack had drained some of the men's strength it was necessary for the platoon leaders or platoon sergeants to check the front line positions about once an hour to make sure someone was awake at each position.

Security was posted at all times in both front line and rear areas. Our troops became very security-conscious because of enemy infiltration. The company CP group set up its own security, as did the men at the 81-mm mortar positions. In addition to a 24-hour telephone orderly post at the CP, several pairs of guards were also posted to listen and observe in all directions around the CP.

The mortar platoon formed a perimeter defense composed of sentries around their guns. In many cases it was possible to coordinate or combine the company CP and

the mortar position security since these installations were usually located near each other.

Feeding presented a peculiar set of problems in Korea. Every time we could arrange it, we gave our men hot meals. This often involved carrying the food long distances, but those who did the carrying did it willingly. At least one member of the mess crew always rode with the chow, often going with it all the way to the front lines. Since we had men at the CP and with at least two rifle companies, the company executive or first sergeant would inform the mess sergeant of the number of men at the CP and with each front line company. The mess sergeant then broke the food down into the proper proportions ready for delivery by the carrying parties.

At the front, the men normally ate on the reverse slope of the hill they were defending. Half of the men ate at a time. A five-yard interval was maintained both in the chow line and while eating. This required constant supervision to enforce because the men liked to eat in groups. Mess kits were kept at the mess tent and brought up with the food. Preparation of the food and its delivery to the front lines were coordinated by the battalion S4.

When it was impossible to feed hot meals, we tried to supplement the C rations. About an hour after daylight, hot coffee and either doughnuts or sandwiches were brought forward; and late in the afternoon, coffee and soup. We also followed this policy after long motor marches.

Since the enemy liked to attack at night, the men at the front did not get much sleep. Whenever we were on the defensive, one man per section from each front-line platoon was permitted to spend the night in a rear area. He would shave, take a bath if shower units were nearby, and get a good rest, free from the cares of the front line.

RECOMMENDED CHANGES IN THE HEAVY WEAPONS COMPANY

The officers of Company H had many discussions on how our job could be done better and how equipment could be improved. Here are some of our recommendations on the heavy weapons company.

1. We need that extra machine gun platoon we used to have in the heavy weapons company. With one MG platoon, a rifle company normally is supported by only one section of machine guns. Two platoons would give much better fire support to the rifle companies. It would also enable the platoon leader to have better control of his platoon, since each platoon would operate normally as a unit in support of one rifle company.

2. We need a lighter, but stable, tripod for the heavy machine gun. Machine gunners prefer to carry the heavy machine gun in the attack whenever the situation permits. Lightening the tripod would make the heavy machine gun more mobile, thus providing the supported rifle companies with more fire power and greater accuracy

than the light machine gun provides.*

3. We also need to increase the 81-mm mortar platoon in size from the four mortars it has now to six mortars. When there are two rifle companies on line, four mortars are usually adequate in the defense, but often in Korea three rifle companies were on line, making it difficult for two sections of mortars to cover the area in front of all the companies. With six guns, a three-company front could be supported without the necessity of shifting the fire of one of the sections.**

In the attack, having six mortars would enable two sections to fire in support of the battalion while one section was displacing forward to new firing positions. We found that two guns did not put out the mass of fire needed in such situations.

4. Every vehicle in the company should have a trailer. The ¼-ton trucks of the commander, executive, and platoon leaders have no trailers. The company communication sergeant was often burdened down with extra wire, radio batteries, and other communication equipment in preparation for an attack, but he had no place to carry it. In addition, every platoon has some vital equipment which should have been with platoon headquarters instead of being carried by one of the squads.

CONCLUSION

The battles that have been fought and are being fought in Korea mark it as a struggle of quality versus quantity. Our North Korean and Chinese enemies have enjoyed superiority in manpower. The quantity side of the scales, measured in numbers of men thrown into battle, has been tipped heavily in their favor. But our quality has in every case evened up the scales and even tipped them back in our favor. We were able to repel every major enemy attack. We were able to mount our own counterattacks as soon as enemy assaults had been repulsed. Our quality, as reflected in training, weapons, equipment, leadership and great performance of the individual soldier, has marked us as superior to both the North Koreans and the Chinese. In view of this, we should face the future with confidence in our ability to handle any enemy daring to challenge us.

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*A new and lighter tripod has been adopted recently. It weighs 25 pounds as compared with the 53 pounds of the tripod used in Korea.

**The platoon of four mortars is expected to perform more satisfactorily when the impending change to the M29 81-mm mortar is made. This weapon has greater range than the old one and a circular base plate that permits fire over a sector of 6400 mils.

PANORAMIC SKETCHING

By CAPT JAMES D. HARNEY, Infantry

"These maps are so old," said the S3, "that we can't trust them. We've got to know what that area looks like now that Aggressor has it fortified. How about photo coverage?" he asked the S2.

"No photos," said Two. "But when our patrol gets back we should have something as good or even better."

The S3 eyed him suspiciously. "I've heard patrol leader reports before. No matter how good they are, they can't take the place of a good picture."

"Well," said the S2, "you should be happy, because a picture is exactly what we'll have for you."

The Three was still skeptical, but he needn't have been. Certain members of the S2's patrol had been trained to make *panoramic sketches*. None of these men had artistic backgrounds, but, following a few principles that almost any soldier can pick up, they were able to produce sketches that showed all the necessary details of the area in their proper relation to each other. The patrol returned, the S3 got his sketches, and the attack that followed was successful.

If the members of your intelligence section haven't been trained in sketch-making, you're losing some of their full potentialities. By following the principles explained in this article you can teach panoramic sketching and enhance tremendously the value of patrol reports.

The panoramic sketch is, as the name implies, a drawing of the area that lies before the observer; in its military sense it is a pictorial representation of the terrain and other features of military value.

The ability to make a panoramic sketch can be developed in a relatively short period of intensive training. Although the average adult feels that he cannot draw, all children draw sketches before they learn to write. The ability to make the hand *draw* what the eye *sees* is a potentiality of everyone. True, some are more gifted than others but it is possible for nearly everyone to learn to sketch with accuracy and ease.

The panoramic sketch has been such a valuable aid in combat situations that all armies use it when possible in planning operations.

In the Philippine Islands during World War II the guerillas found the panoramic sketch invaluable in planning attacks in rugged terrain. On the 11th of January 1945, F and H Companies of the 14th Infantry (a part of the North Luzon Guerilla Force), were to destroy a bridge located three and one-half miles northwest of Bagabag on the Lamut River. Demolition specialist, Captain Donald Jamison, looked the

situation over and found conditions decidedly favored the enemy. The bridge was approximately 400 feet long. Japanese pillboxes were located at the north end of the bridge and collaborating natives guarded the south. It was impossible to attack in the daytime with the two companies totalling, as they did, only about 25 men.

Since an attack at night was indicated, troops needed careful orientation on the bridge, its design, its approaches, and its security. Because it was impossible to reconnoiter the area with everyone who was to be involved in the attack, Captain Jamison sent one man to make panoramic sketches of the bridge from three different positions. Using these sketches, he planned movements of his unit and was able to let his men know what the bridge and its immediate area looked like.

Oriented by the sketches, the guerilla forces found their way in darkness and planted explosives at planned points. The bridge was destroyed in a completely successful operation and the way was paved for further successes in the area.

During his guerilla activities Captain Jamison used panoramic sketches to orient and guide his men in the destruction of eleven bridges and the blocking of numerous roads and passes in this area.

The panoramic sketch is made from one position and can be executed in about 30 minutes. The sketch can be used to designate targets, to locate enemy dispositions, to evaluate the terrain, as a prerequisite to the construction of terrain models, to supplement and clarify reports, and for assigning objectives and sectors. It is especially adaptable to the portrayal of shore lines for amphibious landings, and an excellent means of clarifying reconnaissance reports.

Even with good aerial photos and maps available, panoramic sketches still have their place. Of course, for the most exact picture, down to minute detail, sketches should be used in conjunction with aerial photos and maps. But, remember that maps and photos are valuable only through interpretation while the sketch needs *no* interpretation — it is a definite picture.

You can train your key personnel to make panoramic sketches. Start out with a one-hour orientation to explain the purpose of the panoramic sketch and include a blackboard talk on the principles of perspective—how objects *appear* to the eye, not as they actually are. The remainder of the instruction can be scheduled in frequent thirty-minute practical work periods.

Each class should be given under realistic battle conditions. Present a situation and the purpose of the practice sketch. This will include the amount and type of detail needed. Unlike the photo which includes all detail with equal emphasis, the sketch can be drawn to emphasize only those details necessary to accomplish the mission.

FIRST CLASS

For the first hour of instruction, your men will need paper and soft drawing pencils. As the instructor, you will require only a blackboard and chalk. Sketch simple drawings on the blackboard to illustrate the

principles of perspective. Sketch on the board and have your men copy the drawings, step by step, on their paper. It is very important that their drawings be successful, in order to build their confidence, so keep the work simple.

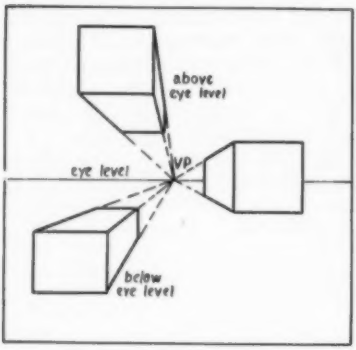

Figure 1. Objects seen above eye level have their bottoms exposed; at eye level, their sides; and below eye level, their tops.

First, explain that eye level is an imaginary line level with the eye and changes when the observer is standing, sitting, or lying down. For example, an object seen above eye level will have the base exposed; an object seen below eye level will have the top exposed; and anything directly at eye level reveals only the sides. (See Figure 1.)

Show them that the vanishing point (VP) is an imaginary point where lines of objects, if extended far enough, appear to converge. (See Figure 1.) One of the best examples of converging lines is a long straight railroad track on which the observer stands and sees the rails appear to get closer together as they recede, until, far away, they seem actually to come together.

Begin with one-point perspective; that is, objects viewed from one end whose sides slant toward the same vanishing point. (See Figure 1.) Tell the men that if they can draw a box they can draw anything. Then, have them follow, line by line, in the construction of simple boxes.

Draw on the blackboard a horizon line (eye level). Place a vanishing point in the center of this line; draw squares on, above, and below eye level. Show the men how to make the sides of the boxes slant toward the vanishing point. Explain how to make blocks into buildings by adding roofs. (See Figure 2.) In order to find the center of the block, draw diagonals, joining each corner to its opposite corner. The intersection of these lines is the center of the square. Draw a vertical line up from this point to locate the center of the roof.

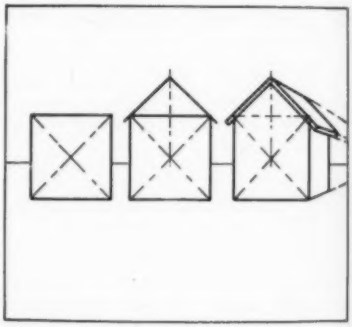

Figure 2. Blocks are made into buildings by adding roofs.

Two-point perspective is used when one corner of an object is nearest the observer and all lines to the right of this corner appear to converge at one vanishing point on the far right; likewise, all lines to the left of this corner appear to converge at one vanishing point on the far left. (See Figure 3.)

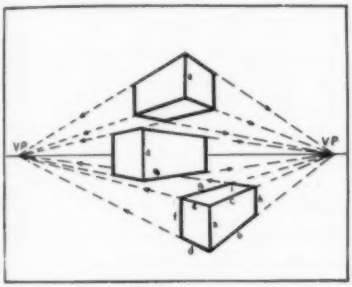

Figure 3. Two-point perspective involves two vanishing points (VP's).

For reconstruction of this sketch, first draw an eye level line on the blackboard, placing a vanishing point far out on the right of where the drawings are to be placed, and another vanishing point far out to the left. Keep these points on the eye-level line. Now draw lines in alphabetical order as lettered in Figure 3. Start by drawing the three vertical lines, lettered *a*, one above, one below, and one on the eye level. From top and bottom of these verticals, draw light lines to the vanishing points on either side. For completion of boxes above and below eye level, sketch lines to show the bottom and the top, respectively. Now, add the verticals for the far ends of boxes. Emphasize those lines which outline the boxes so that the class may grasp the full significance of the principles involved. Show how to make those blocks into buildings by adding roofs in the same manner as in one-point perspective. (See Figure 4.)

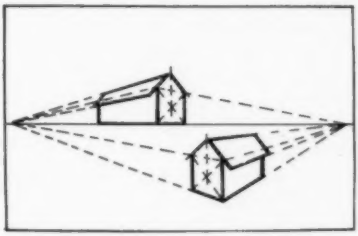

Figure 4. In two-point perspective, roofs can be added to blocks to make buildings just as in one-point perspective.

The eye level is usually the same as the horizon; this is always the case in level terrain. When looking upward, eye level and vanishing points are *above* the horizon. When looking downward, eye level and vanishing points are *below* the horizon. (See Figures 5, 6, 7, and 8 illustrating these principles.)

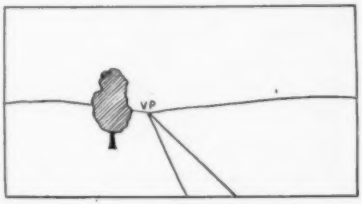

Figure 5. In level terrain the vanish-point (VP) is on the horizon.

In flat terrain parallel lines appear to vanish at a point on the eye level or horizon and equidistant objects appear closer together as they recede. A line of telephone

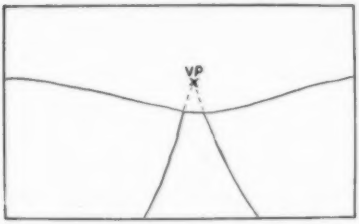

Figure 6. When looking up, the vanishing point (VP) is above the horizon.

poles along a level road is a simple illustration of this principle. Draw the first telephone pole in place beside the road. Bring lines lightly from its base and its top to the vanishing point on the horizon, thus establishing control lines of perspective. Draw the second pole in place as it appears to be, keeping it within the lines of perspective which lead to the vanishing point. Find the center of the second pole and bring a light line from the top of the first pole *through* the center of the second pole to the lower line of perspective. This locates the position of the third pole. The position of the fourth pole, etc.,

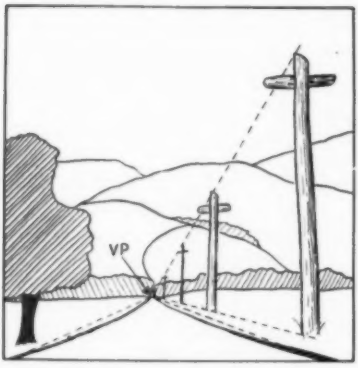

Figure 7. When looking down, the vanishing point (VP) is below the horizon.

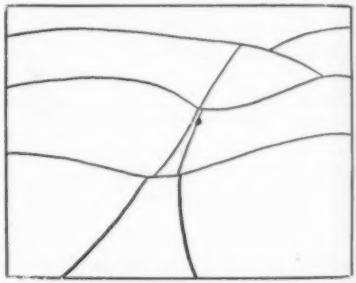

Figure 8. Vanishing points of roads leading over a series of hills are all above the horizon when seen from a lower level.

can be located by the same method. (See Figure 9.)

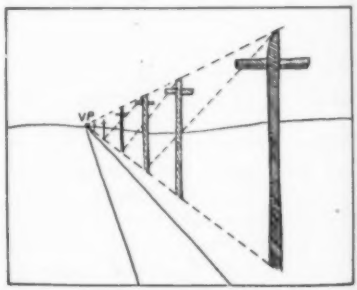

Figure 9. Equidistant objects appear closer together as they recede.

Shading is done by hatching, the darkest shading being on those objects nearest the observer. (See Figure 10.) Objects in the foreground are drawn with dark, thick lines and as they recede toward the background all lines become thinner and lighter.

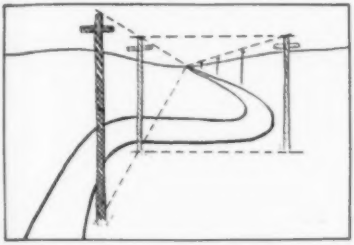

Figure 10. Objects in the foreground are drawn with darker, thicker lines. As they recede toward the background all lines become thinner and lighter.

SECOND CLASS

The first drawing assignment of an area should be kept simple. No attempt should be made at this time to incorporate the mil scale into the drawing. The principle of proportion can be simply explained by using the pencil as a measuring device, holding it vertically at arm's length and sighting the height and width of objects thereon. Distances, too, can be determined in this manner. (See Figure 11.)

The first representative drawing should include a few of the examples of perspective that were discussed during the first period. Caution the men to draw the horizon line first and to use their pencils to determine proportions. Have them lay their drawings down with the top edge of the paper parallel to the horizon and then draw in a North arrow on the bottom of the paper. In the lower left corner, have them letter their location. In the lower right corner, have them place the time, date, and their names, ranks, and organization. Basic errors in drawing are apparent at this time. Supervise closely and make corrections. About 99 per cent of good drawing is good observation. Many men will draw things from their imagination and must be made to see how the terrain actually appears to them when they look at it.

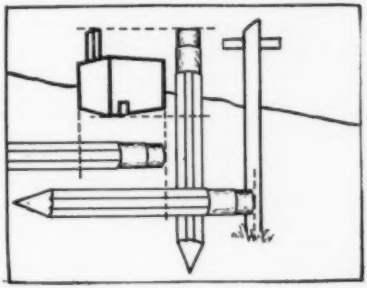

Figure 11. The pencil can be used as a measuring device.

Figures 12 and 13 are examples of good and bad observation and proportion. Notice how the man who drew his horizon line in first, then a near telephone pole, has good drawing and proportion. Figure 13 shows how the second man failed to notice that the telephone poles in the foreground extended above the horizon. He failed to draw the horizon line first and his proportion is wrong. Question this man and he will easily see his own error. If you find a man having

trouble with some detail, have him add explanatory marginal notes and place an arrow pointing to the location of the detail on the sketch.

Shading by scribbling should be discouraged, as it tends to obscure other detail and gives the sketch a disorderly appearance. At the end of this period of instruction the men should compare sketches and see how they vary according to the positions from which they were sketched.

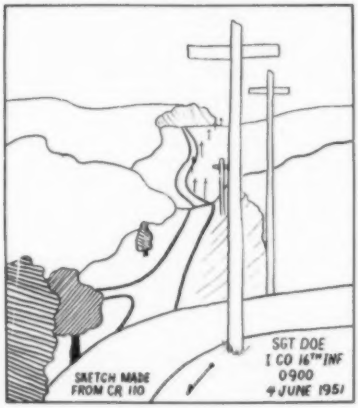

Figure 12. Proper proportion resulting from good observation.

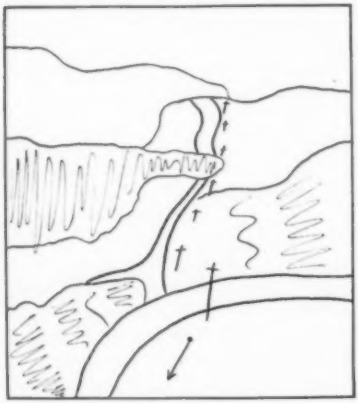

Figure 13. Improper proportion resulting from poor observation.

THIRD CLASS

The third period of instruction should be given according to the principles outlined in FM 21-35. Practical work is done on the sketching sheet. (Figures 14 and 15.) This method is especially designed to produce range cards. The men should have maps of the area and sketching sheets. (See Figure 14.) If no sketching sheets are available, they can be made with duplicating ink and reproduced by the gelatin process prior to the instruction. The map will prove valuable in determining the sketcher's position and in determining range information for the sketch.

Draw on the blackboard an outline of the sketching sheet, enlarged and in colored chalk. Make the blackboard drawing in white chalk for contrast, explaining step by step the use of the sketching sheet. For best results, the following procedure is suggested:

1. Discuss the terrain, horizon line, and features of military value.

2. Fill in all marginal information, explaining that if the sketcher is unable to finish the sketch and sends it back without the marginal information, it is worthless. The marginal information should be filled out even before the sketcher goes out to make his sketch if possible. It is important to show the sketcher's location. This may be done by map coordinates.

3. Select a Reference Point and Reference Line. The Reference Point should be permanent and conspicuous. The other objects on the sketch will be drawn in relation to this Reference Point.

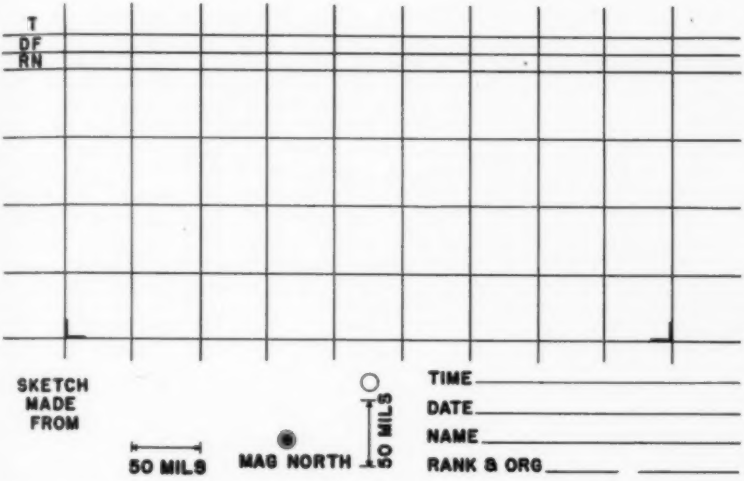

Figure 14. Sketching sheet. This may be reproduced locally by printing or mimeographing. In the upper left corner of the sheet the abbreviations are: **T** *for* **target, DF** *for* **deflection,** *and* **RN** *for* **range.**

4. Explain the use of horizontal control. The vertical lines on the sketching sheet are ¾ inch apart. If you hold the sketching sheet 15 inches from your eyes, each ¾ inch between lines subtends an angle of 50 mils. FM 21-35 suggests that a string 15 inches long be attached to the sketch and the opposite end be held between the teeth to maintain this distance. Draw in the horizon line along the top horizontal line and sketch the Reference Point.

Explain that the Reference Point is always zero and other features are measured to the right and left of the Reference Point for deflection. Require the students to determine the number of mils from the Reference Point to another feature on the terrain.

The "T" on the top line stands for Target (identification of objects). Use this line to identify targets briefly in one or two words. Fill in the Deflection zero (on the DF line). Fill in the range from your position, on the RN line, as determined from the map or by range estimation.

5. Explain vertical control by measuring from the Reference Point along the side of the sketch in the same manner as you measured across the top of the sketch to features located laterally from

the Reference Point. Select a feature to measure vertically from the Reference Point and ask the men to determine the number of mils vertically between this point and the Reference Point. Draw in this feature on the blackboard and have

horizontal and vertical control early in the period, it may not be necessary to do the complete drawing on the blackboard. In such a case, the instructor can leave the board and give individual assistance to the students.

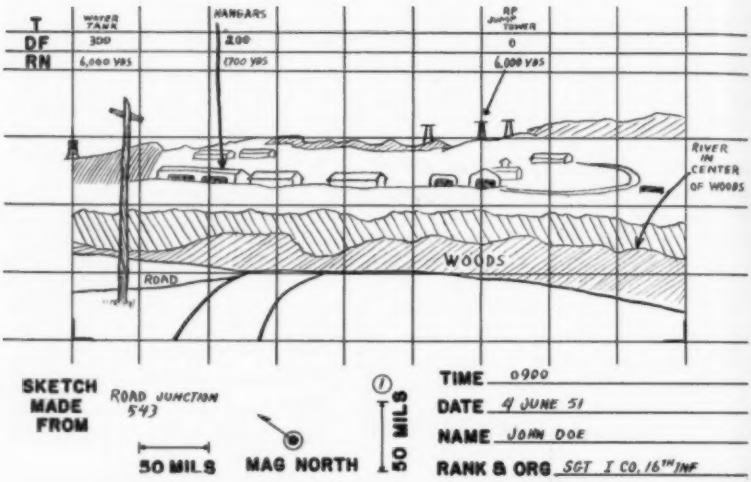

Figure 15. Sketching sheet, complete with data and drawing.

the men draw it on their sheets. Explain that it is not necessary to write in the deflection for vertical differences since it is shown in the drawing.

6. Add other details of military value according to their importance and the time available. It is impossible to draw everything seen. The sketcher must select conspicuous features and omit unimportant detail.

7. Complete sketch by shading.

If the men grasp the meaning of

At the end of this period summarize the points covered and explain how the sketch may be drawn differently, according to the purpose for which it is made. If the sketch is to be used to supplement a map it should include a wealth of detail showing the over-all terrain, ridge lines, and any features which may not appear on the map. The range card merely shows details to clarify the location of enemy targets and ranges to various points. If the sketch is to clarify a message it will show only details that serve

this purpose. Other details not pertinent to the message can be omitted.

Information shown on a sketch may be plotted on maps at any headquarters receiving the sketch. If the observer's position and the reference point are known and are found on a map, they can be plotted. Any additional points shown on the sketch can be transferred to the map by plotting mils from the reference point and distance from the observer.

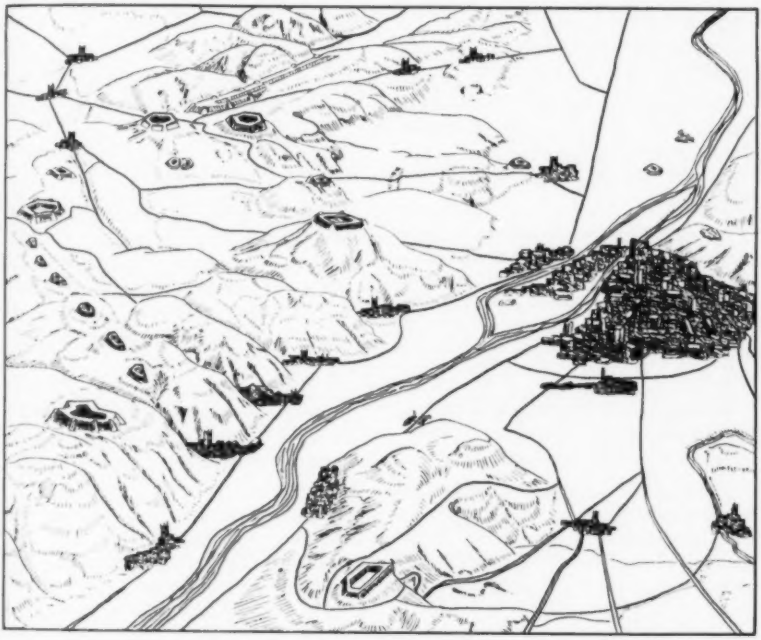

Figure 16. Portion of panoramic sketch of fortifications near Metz, France.

FOURTH CLASS

The next period of instruction should be conducted in a tactical situation. Divide the class into several groups and give each group definite assignments to work on. Examples are:

1. Make a range card showing the location of enemy weapons which are pointed out to the group.

2. Make a terrain sketch for an attack on a specified hill. Show best avenues of approach for a combat patrol.

3. Make a series of road sketches showing the panoramic view of the road from a position on it to a specified hill, with emphasis on the type of road surface, bridges, shoulders of the road, and the terrain on either side. Much of this will need marginal notes for clarification. The sketches should be numbered consecutively for proper clarity.

4. An enemy observation post is located on a map; make a panoramic sketch of its location from a specified location. (Give map coordinates.)

5. Go to the top of the next ridge and observe the ground to your front. Suppose enemy snipers spot you before you have even started to sketch. Return and draw a panoramic view from memory with the aid of the map.

6. Assign a group adjacent views. Place completed sketches side by side for a combined sketch.

Each of these assignments should take about thirty minutes. If they are completed successfully your students should have reached the point where they can produce panoramic sketches of great value to a commander. The use of panoramic sketches is not confined to small units. Nor do these sketches have to remain elementary drawings. Figure 16 shows a portion of an elaborate sketch made during World War II by Captain Eames L. Yates of the 90th Infantry Division. This sketch shows Metz, France, and the great system of fortifications around that city. The value of this sketch to a large unit can be seen readily.

Any unit can use the panoramic sketch. It affords the commander a means of better understanding the terrain. It can be made quickly and from one position. It can be taught in a short period of intensive training. All the equipment a student needs is a pencil and a piece of paper.

Keep the purpose of the sketch in mind. Remember that speed is essential. Use marginal notes to clarify doubtful parts of the drawing.

Once he has used panoramic sketches, no commander will be willing to neglect the possibilities of assistance they afford.

Do you know how to conduct a night withdrawal? What does a platoon leader do when he is told to form a covering force? How many guides do you need? Who commands the covering force?

***A Rifle Platoon Withdraws at Night,* by Lt Col Leonard M. McNutt, will give you the whole story. Read it in the January 1952 *Quarterly*.**

TIGHTEN YOUR LANDING PATTERN

By LT COL JOHN R. RICHMOND, Infantry

The opinions expressed in this article are those of the author and do not necessarily represent current thought at The Infantry School.

Which is better — tactical unity of airborne infantry squads and platoons within an aircraft or tactical unity after they hit the ground?

We should decide, because our present method of loading an entire platoon into a single aircraft gives us unity in the aircraft but a considerable time elapses between the time they exit from the airplane and the time unity is again attained on the ground.

Once a platoon has jumped, its landing pattern is going to spread its men so far, in the direction of flight, that squad leaders can't control squads, nor the platoon leader control his platoon.

The landing pattern of a platoon, loaded into a single airplane as is now the practice, looks something like that shown in Figure 1, with squads dispersed 500-700 yards from end to end in the direction of flight, and platoons 1000-1400 yards.

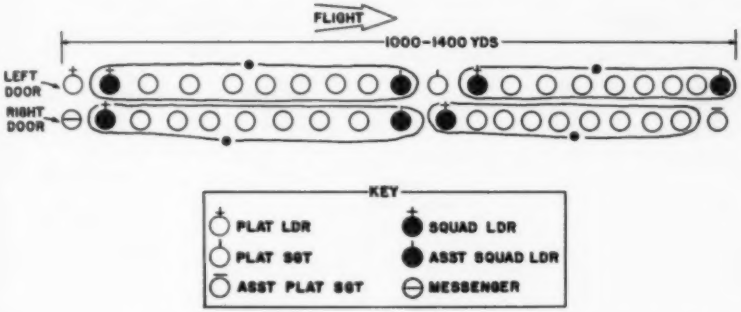

Figure 1. Typical landing pattern of a platoon dropped from a single aircraft loaded according to the present plan. Note that while the pattern is narrow it is so long as to make immediate control of the platoon virtually an impossibility.

For the utmost in surprise in airborne assault the reorganization of parachute units on the ground must be rapid. However, historical re-

ports show that the reorganization of squad and platoon-size units in combat operations have at times been so slow as to delay the effective employment of the major units.

The ideal situation would permit the small unit leader to gain control of his unit almost immediately after landing. The ultimate in desirability is for squads to land within voice range of their squad leaders and platoons within visual distance of their platoon leaders. With the present loading system that ideal situation seldom occurs.

Now that we are using such aircraft as the C-119, with its greater speed, the problem is aggravated, for landing patterns tend to become longer and longer. I believe that our present loading doctrine should be re-examined with a view to producing a loading plan that will decrease dispersion of small units on the ground.

Current field manuals state, "So far as possible, tactical unity is maintained in loading. Tactical

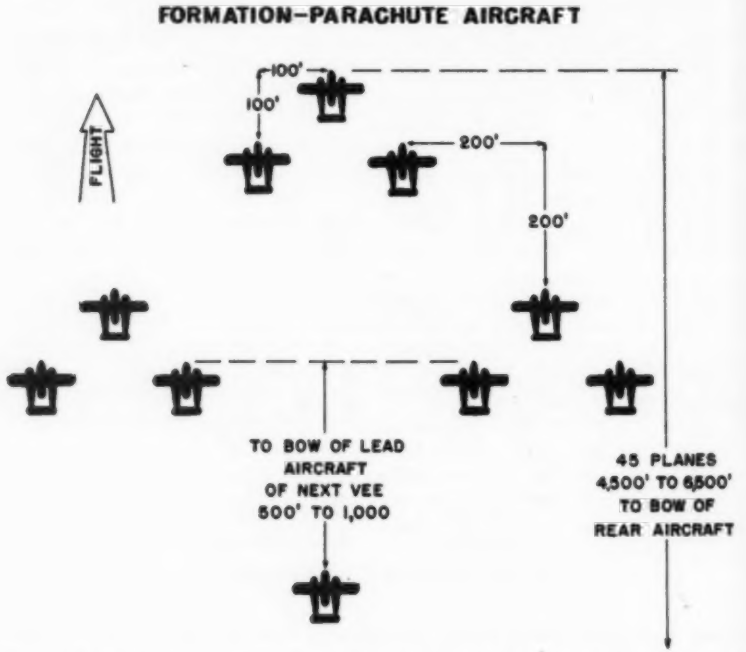

Figure 2. The most common formation for parachute aircraft is the "vee of vees." This illustration shows this type formation and indicates likely distances between aircraft and between elements of the formation.

unity of squads or platoons usually can be kept in individual aircraft. Infantry battalions should be intact within a single aircraft serial." I have no disagreement with the last sentence of that quotation. However, I believe the portion referring to squads and platoons should be reconsidered. Loading squads and platoons into single aircraft means that immediately after landing they're strung out in a line so long

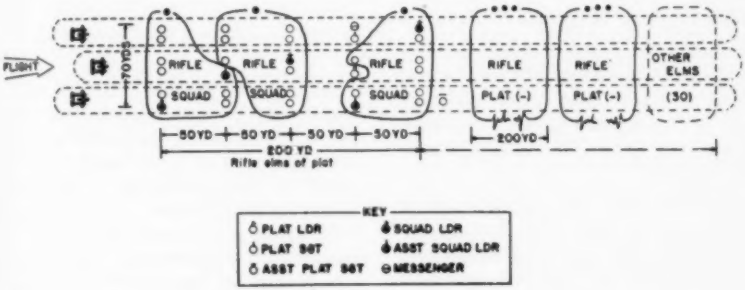

Figure 3. Landing pattern of the rifle elements of three rifle platoons dropped from a vee of three aircraft when loaded according to the manner advocated in this article. Note that the platoon at the left shows in detail the pattern of its three squads. The outlines of the remaining two rifle platoons and the 30 men from other elements are drawn to a smaller scale. Each of these additional platoons would occupy the same amount of ground space as the first platoon. They have been drawn in this manner because of space limitations on this page.

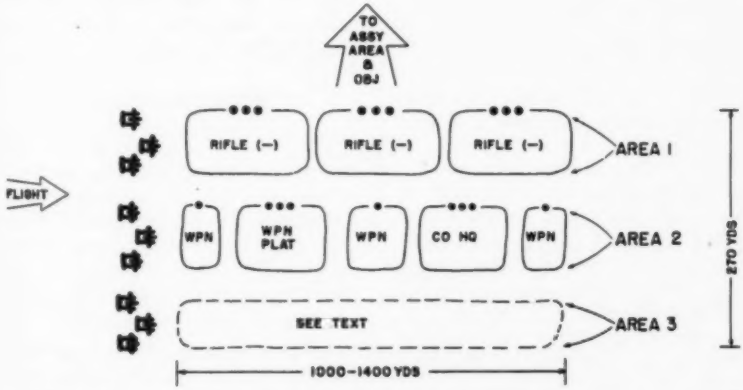

Figure 4. Landing pattern of a rifle company dropped from two vees when loaded according to the manner advocated in this article.

that no one leader can effectively control his squad, let alone a platoon, until many minutes have been spent in assembling its members.

I propose splitting squads and platoons in aircraft so they will be closer together when they land. How can this be done?

Since the most common formation for parachute aircraft is the "vee of vees" (see Figure 2), we can so load our aircraft as to produce a pattern like that shown in Figure 3.

This is done simply by splitting members of each of the squads among the three aircraft in the vee. Then, instead of landing each squad in a long stick, there will be six short sticks per squad. (See Figure 3.) Since aircraft in a vee fly about 35 yards apart, laterally, we then have the squad landing in a pattern whose theoretical dimensions are about 70 by 50 yards rather than one that is much narrower but may be 500 to 700 yards long. Judge for yourself whether it will be easier to control a squad, immediately after landing, in the first or the second situation.

The three rifle squads of a platoon, loaded in this manner (with each airplane of a vee carrying a part of each squad) will have a landing pattern whose length is less than that of a squad all of which has been loaded in one airplane and dropped in a single stick. With a condensed landing pattern, the platoon, once it is landed, can be *led* without the necessity of trusting too much to the initiative of its many individuals.

Now consider the remaining elements of the company. (See Figure 4.) From the center vee of aircraft we have landing in Area 2 the weapons squads of the rifle platoons, the entire weapons platoon, and company headquarters. If we assume the company assembly area and objective to be in the direction indicated, we have a ready-made tactical formation for movement in that direction.

Since the rifle elements of the three rifle platoons do not occupy all available spaces in the left vee landing in Area 1, we may add to the load of those aircraft a machine gun section (17 men), a 75-mm rifle squad (10 men), and an artillery forward observer team (3 men). The 25 spaces left over in Area 2 may be similarly used by filling them with other elements of the heavy weapons company or battalion headquarters company.

Area 3 is not treated in detail in this article as it is not necessary to the basic idea. However, that area may take other elements of the heavy weapons company, the heavy drop of the rifle companies, the battalion command group, or other elements of the battalion landing team.

OBSERVATIONS

1. As the jump speeds of aircraft increase, landing patterns become longer. Using the loading method advocated in this article, small units can organize more rapidly after landing. This leads directly to more rapid organization of larger units — company and battalion.

2. Recent parachute developments may permit us to use such comparatively high speed aircraft as the C-54 for jumping. Using this loading method would obviate one

of the drawbacks of faster airplanes — the long landing patterns of the troop units they carry.

3. In the illustration (Figure 2) the platoon in effect lands in squad columns. Loading can be controlled to yield other tactical formations.

4. While the loss of a plane, using the old loading method, results in loss of an entire platoon, loss of a plane in the method advocated would result in loss of parts of three squads of each platoon. Those parts remaining would retain leaders. Thus, the company would retain its three-rifle elements (although under strength) rather than two full strength rifle platoons.

5. With faster organization a probability, assaulting elements can jump closer to an objective thus enhancing their chance of surprise.

6. Monorail, door, and heavy drop loads may be arranged in a serial according to a similar technique.

7. Even if a high degree of flight precision is not attained, this method will yield a high concentration of units on the ground.

8. Ground concentration of key personnel, such as a command group, may be effected in this way without the dangerous necessity of loading all of the group in the same aircraft.

EDITOR'S NOTE: The Infantry School reiterates that the aircraft loading method advocated by Lt Col Richmond is *not* the one now taught.

Present doctrine holds that units should be kept intact within aircraft, i.e., a platoon should be loaded into a single airplane.

Supporters of the present method point out that if Lt Col Richmond's ideas on loading were used, loss of an aircraft would entail loss of parts of several units. They also hold that if an airplane with its multiplicity of units should land those scrambled parts in an isolated area, the 35 or 40 men so landed would be far more difficult to employ offensively or defensively than would a single platoon landed from one aircraft.

The Infantry School does not approve the author's method but presents it as a controversial idea that may stimulate additional thought on the problem of reducing assembly time of parachutists after landing.

"Pay is a great morale factor. But it loses much of its morale effect if there are delays or mistakes in payment. Your men want to know what is due them, and when it's due."

Our next *Quarterly* will contain a short course in the Army pay system. All you need to know about pay and allowances is covered in a short and simple article written by Major Edgar N. Millington. Read *Pay and Allowances* in the January 1952 *Quarterly*.

LETTERS

In several reports on the Korean fighting I have read of units who have used searchlights to great advantage. I wonder what The Infantry School teaches about their use. I used to think of searchlights only as AA equipment.

I would like to know if there are any reasons why searchlights could not be used to direct fighter-bombers on targets at night when the terrain permits observation. If this were possible, units could count on air strikes at any time, day or night.

Lt, Rifle Platoon

The Infantry School at present teaches that the 60-inch searchlight provides a very fine means of battlefield illumination. The searchlight formerly used by the Anti-aircraft Artillery is now Engineer equipment and it is proposed that an Engineer Searchlight Battalion be organized and made available to each type Field Army.

These searchlights may be used to provide either direct or indirect illumination. In using them in the direct method the light(s) must be placed so as to get direct line of sight coverage of the area to be illuminated. With indirect illumination the lights are placed in defilade and the illumination is obtained either by the diffusion of the beams meeting small particles in the air or by placing the beam on the underside of a cloud and thus getting illumination through reflection.

It is believed that these lights have great possibilities for tactical use and tests are being conducted to determine just how feasible their use would be in both offensive and defensive operations.

Reference your question concerning the use of searchlights to mark targets for fighter bombers, searchlights could mark the target in certain situations satisfactorily; however, it is believed that flares or illuminating shells are a more practicable means for this purpose.

Maj Kimball's "Cross Before You Get There" in the April QUARTERLY, *brings up a point that's been bothering me for some time: Why not motors on the M2 assault boats? Let the doughboy keep his paddle, but assist him with about a 10-horse outboard motor.*

Is there a need for such a motor? There certainly is. The actual river crossing is a painfully slow business, and the return trip for the second wave is even worse. Not only would the crossing be speeded up, but formations could be maintained, the exact spot for landing could be determined and the soldiers in the assault boat could be freed to deliver quite a burst of firepower, if it were needed, without losing control of the boat.

Are the motors available? If you're a fisherman, you know they are. There are as many varieties as

there are cars, and all are just about as dependable. Considering other instruments of war, these motors are cheap, and they can be carried by one man as far as 12 men can carry the M2 assault boat.

Just in case you haven't had much experience with outboard motors in the last ten years, and therefore might be questioning their dependability, let me point out a few advances: They now can run in hot, ice cold, or salt water without endangering the block. They can bump over a rocky or muddy bottom or go through weeds without shearing pins or clogging up. They weigh about 5 pounds or less per horse power. They start on the first attempt and they run wide open for 10 hours on one tank full of gas. I'd like to have one on the stern of the M2 assault boat that takes me across.

Capt, Infantry

Your suggestions on use of motors for a river crossing are very well taken. Our engineers do use motors for shuttling boats once the attack has been discovered and secrecy is lost. However, our tactical doctrine stresses that every effort should be made to maintain secrecy initially in the attack of a river line.

There are times when this tactical secrecy will be sacrificed for speed. In this case motors are used to cross assault waves. (The crossing of the Rhine River in 1945 by the Ninth Army is an example.)

Storm boats powered with the 55-horsepower motor are used at present. The motor powering this boat will probably be replaced with a 75-horsepower motor.

We now have a 22-horsepower motor which is used to power two M2 assault boats fastened together. This 22-horsepower motor may be replaced eventually with a 33-horsepower motor. Research and development by the Chief of Engineers is being conducted on motors continuously. It is not believed that a 10-horsepower motor will meet the requirements. The larger motors as mentioned above are being studied.

Your article "Rifle Company as Support of an Advance Guard" in the July 1951 issue of the QUARTERLY *was instructional and interesting. I do not understand or agree with Figure 3 however, even though this figure is taken directly from FM 7-10, "Rifle Company Infantry Regiment."*

It is impossible to place a TO Rifle Company, minus one platoon, in the recommended formation for The Support *in 150 yards of road space, even considering elements are taken out of the company for flank guards, connecting files, and attachments to reinforce* The Advance Party.

Even though "distance should not be too great to prevent each element from rapidly assisting the element to its front, distances should be great enough to allow the succeeding elements to deploy without serious interference from the enemy once contact is made."

Major Kimball stated that in The Support *the distance between men is usually two paces. With due consideration to the mission of* The Support *and the other factors effecting its employment, I do not*

think that is enough distance between men in a normal situation; however, even if the distance between men were two paces, or even forty inches, a TO Rifle Company minus should take at least 250 yards of road space.

1st Lt, Infantry

Perhaps the following breakdown will answer your questions on the calculations used to determine the guide figures for road space occupied by a company acting as advance guard.

Total Personnel in Rifle Company		204
Personnel not with support proper		
1. Advance Party		
T/O Rifle Platoon	41	
Attached 57-mm rifle squad	5	
Attached 60-mm mortar squad	5	
Advance Party Total	51	
2. Company headquarters		
Administrative warrant officer	1	
Mess personnel	7	
¼-ton truck drivers	4	
2½-ton truck driver	1	
Fillers	18	
Headquarters Total	31	
Total not with support proper	82	82
Total *with* support proper		122

That leaves us 122 men for whom we have to figure road space. FM 101-10 tells us that in a road march each man needs about 2.7 yards of road space. Then we have

$122 \times 2.7 = 329.4$ or 330 yards

But, since our column is marching in two files, we divide that figure by $2 — 330 \div 2 = 160$ yards.

You may point out that this 160-yard figure is still greater than the 150-yard guide figure. However, by the time we take out connecting files and flank security personnel the overall yardage, at 2.7 yards per man, reduces to considerably less than the 150 yards given in the article.

Lest you still question this figure, the author repeats that it is given for *guide purposes only*. If the situation warrants spreading your men over a greater distance, by all means do so. There can be no hard and fast, parade ground figure set down for formations in any tactical situation.

We are glad to have letters such as yours since if you found this point puzzling, it is quite likely that many others did also. By writing to the QUARTERLY you've given us an opportunity to clarify a point that might, eventually, have caused confusion in many units.

If you are puzzled by any point on Infantry tactics, weapons, or procedures, write to the *Quarterly*.

Meet the Authors

Lieutenant Colonel Lyman S. Faulkner, author of "Security During Movement," graduated from West Point in 1941. Originally with the Armored Forces, he went to the 11th Airborne Division in 1943 as a regimental S2. He participated in airborne assaults in the Philippines and later commanded a battalion of the 187th Parachute-Glider Infantry in the occupation of Japan. He is now a member of the Research and Analysis Office of The Infantry School.

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Our working-model duo, Major Frederick H. Black, Jr., and SFC Coats Brown, are back with us again. Major Black writes the text for their series of articles on small-arms working models, and Sergeant Brown figures out dimensions and does the drafting work for the drawings. They're well-qualified for their subject. Major Black has taught small-arms for the past three years and Sergeant Brown won the National Individual Rifle Match at Camp Perry in 1939.

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Lieutenant Colonel Edward M. Flanagan gives us another article on the employment of airborne units. Advocating greater and more frequent use of airborne units by assigning these units to Corps Headquarters in the same manner as Armored Cavalry units are often assigned, the author probably will stir up as much discussion as he did with his "Beachhead of the Future." Lieutenant Colonel Flanagan is an instructor in airborne techniques at The Artillery School.

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QUARTERLY repeater, Major J. K. Cockrell, appears again with an article on cargo aircraft loading. His first article, "Balancing Cargo Aircraft," told of a new method for a normally time-consuming job. Once more the author proposes a new airborne technique — this time for lashing loads for air movements. Major Cockrell is currently S3 of the 325th Airborne Infantry Regiment stationed at Fort Bragg, North Carolina.

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Combining civilian with military know-how, Captain James D. Harney, recently recalled to active duty from his civilian occupation of art teacher in Indiana schools, has been assigned to instruct in the subject of his article, "Panoramic Sketching," at The Infantry School. A former National Guard enlisted man, Captain Harney graduated

from Benning OCS during World War II.

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A Texas A&M graduate, Lieutenant Colonel John R. Richmond is a combat paratrooper. From 1942 until 1945 he was Battalion S3, Combat Team S2, Battalion Executive, and Battalion Commander in the 503d Parachute Combat Team. In addition to making the Markham Valley-Lae, Schouten Island, and Corregidor drops, Lieutenant Colonel Richmond performed clandestine intelligence operations with Philippine guerilla forces. He is currently an airborne and guerilla warfare instructor at The Infantry School.

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Captain Charles Multop draws on his experience with the 2d Division in Korea for the material in his "Heavy Weapons Company in Korea." He was a machine gun platoon leader, company exec, and company commander before being wounded in November 1950. His unit — 2d Battalion, 23d Infantry Regiment. During World War II he served with the 35th and 95th Divisions. Overseas with the 95th he was an 81-mm mortar officer during three European campaigns.

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Our sniper experts, Captain Albert J. Crupi and Warrant Officer William F. Odom, have combined their experiences to write a very timely article. Captain Crupi graduated from Infantry OCS in 1943. He served overseas with the 345th Regiment of the 87th Division. After two campaigns in Europe he was wounded and returned to the ZI in April 1945. Recalled to active duty in 1951, he is now an instructor in the Weapons Department at The Infantry School. Warrant Officer Odom served as an enlisted man from 1940 until 1950. He made the Normandy and Holland jumps with the 502d Parachute Regiment of the 101st Airborne Division. He received his warrant in September 1950 and is now assigned as a Weapons Department Instructor.

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Lieutenant John P. Vollmer draws on his own sub-zero experiences for his tips on fighting in cold weather. He graduated from USMA in 1949, attended Ground General School, Fort Riley, Kansas, Officers Basic Course at Fort Benning, and in August 1950 joined the 7th Infantry Division in Japan and went into action with that organization in Korea. Wounded in January 1951, Lieutenant Vollmer was returned to the States and hospitalized until June of this year. He is now an intelligence instructor with the Staff Department of The Infantry School.

ANNUAL INDEX

October 1950 through July 1951

For the convenience of its readers, the QUARTERLY presents in this issue synopses of all articles appearing during the past year.

A limited number of copies of the four issues is available through the Book Department, The Infantry School, Fort Benning, Georgia, at 65¢ a copy.

OCTOBER 1950

THE BAYONET — SPIRIT WEAPON — *by Maj Schiller F. Shore, Infantry.*

A plea for the return of the "spirit of the bayonet." Good reasons why bayonet instruction has been reinstated in Infantry training.

INFANTRY AND VT FIRES — *by Lt Col Bruce Palmer, Jr, Infantry.*

Clears up some of the mysteries surrounding the use of VT fire. The article discusses capabilities and limitations of VT-fuzed shells as they affect Infantrymen.

"THIS PLATOON ATTACKS . . ." — *by Capt Charles K. Blum, Infantry.*

A highly interesting article on a small unit action — written in a style that lends itself to quick adaptation for field training. The action is carried from issuance of the company order through the attack on an enemy-held position. It includes the platoon's systematic reorganization on the objective.

CAPABILITIES OF THE NEW AIRBORNE DIVISION — *by Maj Lyman S. Faulkner, Infantry.*

A speculative article outlining recent changes in the airborne division and proposed new techniques for airborne units.

S4: REHABILITATION — *by Lt Col Charles F. Coates, Infantry.*

An informal presentation covering all of the duties of a regimental S4 in connection with the rest and rehabilitation of a combat-worn unit. Coordination with other staff officers is stressed.

IS DIRECT SUPPORT NECESSARY? — *by Maj Emil V. B. Edmond, Infantry.*

A highly controversial dialogue between two field grade officers — one completely sold on the idea of *direct support* missions; the other entirely opposed to the use of the term.

TOWING SKI TROOPS — *Maj Ingebrigt Solum, Norwegian Army.*

The Chief Instructor of the Norwegian Infantry and Winter Warfare School shows how the mobility of ski troops is increased by using tow vehicles and tells how to get ski troops into action in the best possible physical condition.

MORE ABOUT "THE COLONEL'S MOTORS" — *by Lt Col John T. Ewing, Infantry.*

Looking into the future at new types of Infantry motor transport,

a regimental commander talks over motorized cross-country mobility for his rifle units.

AIRBORNE QUARTERMASTER PARACHUTE MAINTENANCE COMPANY — *by Capt William J. Hojnacki, Infantry.*

Information on a little-known, but vital, airborne division unit.

TECHNIQUE OF INSTRUCTION: CRITIQUE — *by Capt Marvin J. Berenzweig, Infantry.*

A practical example of a poor critique, with the mistakes clearly pointed out.

SMALL ARMS WORKING MODELS — RIFLE, M1 — *by Capt Frederick H. Black, Jr., and SFC Coats Brown; Infantry.*

Detailed constructional drawings, photos, and descriptions of a working model of the M1 rifle and a discussion on how and when to use the model for instruction.

WANTED: REALISM IN WEAPONS MARKSMANSHIP TRAINING — *by Capt John R. Flynn, Infantry.*

Capt Flynn calls for a re-examination of our marksmanship training. He wants less formal marksmanship training time, and more time for small unit field firing training.

WANTED: BETTER MARKSMEN — *by Lt Col M. C. Taylor, Infantry.*

Lt Col Taylor rises in defense of our present marksmanship training concept, and presents a rebuttal to Capt Flynn's article. He jumps on the trend toward mediocrity in marksmanship training with both feet, and hits hard at *volume* fire, which he declares is a poor substitute for aimed, accurate shooting.

8000 STUDENTS BY MAIL — *by Capt George R. Adjemian, Infantry.*

A description and listing of all subcourses offered by the valuable Infantry Army Extension Course program to all Infantry officers and enlisted men.

TECHNIQUE OF MARCHING: WATCH THOSE FEET.

How to prevent foot casualties before they occur.

WEAR 'EM RIGHT! — *by Maj David E. Milotta, Infantry.*

A short pictorial article answering many questions concerning the proper wearing of insignia, awards, and decorations.

REVERSE SLOPE DEFENSE — *Maj Edmund L. Mueller, Infantry.*

Maj Mueller cites history to show the value of reverse slope defensive positions; presents the advantages and disadvantages of such a defense; and shows how to set-up a complete battalion reverse slope defensive position.

TOWN COMBAT — *by Maj Houck Spencer, Infantry.*

Covers all phases of fighting in towns and shows the differences between fighting in the open and fighting in towns.

JANUARY 1951

THE BIG BAZOOKA — *by Capt Robert J. Parr, Infantry.*

Basic facts about our new tank-killer with emphasis on the differences between the 3.5-inch and the 2.36-inch launchers.

BALANCING CARGO AIRCRAFT — AN EASIER WAY — *by Capt J. K. Cockrell, Infantry.*

A new approach to a time-consuming problem. A thought provoking article on a simple method of balancing cargo aircraft.

TELL 'EM HOW, SHOW 'EM HOW, HAVE 'EM DO IT — *by Maj LeRoy C. Brown, Infantry.*

How to be an army instructor in one easy lesson. A complete sample lesson plan and instructions on how to conduct a tactical walk.

RAIDING PATROL — *by Capt Charles K. Blum, Infantry.*

Reads like a short story but contains every essential point that must be covered in the preparation and conduct of a combat patrol mission.

YOUR NEW 2½-TON TRUCK — *by Capt Robert M. Cook, Infantry.*

An introduction to our new Reo Truck, the M-34, and its 28 improvements over the old 2½.

ACTION AT TONGMYONG-WON — *by Lt Col James W. Edwards, Infantry.*

The first of our on-the-spot Korean articles. Lt Col Edwards takes us through four days of defensive and highly successful offensive battalion combat.

SCR-300: AIRCRAFT RADIO — *by Lt Chester R. Mead, Infantry.*

A method of installing this set in the L-5 aircraft for air-ground communication. The system described worked well in Korea.

DEATH OF THE GLIDER — *by Maj Edward M. Flanagan, Artillery.*

An introduction to the heavy drop technique and organization.

DISCOVER YOUR FIELD GLASSES! — *by Maj Schiller F. Shore, Infantry.*

Fine illustrations and extremely helpful tips on these commonly used instruments which, too often, are never exploited fully.

CAPTAIN DOUGHBOY — INFANTRY-TANK TEAM COMMANDER — *by Lt Col George B. Pickett, Jr, Armor.*

The proper use of Infantry and Armor in the attack.

NEW INFANTRY TRAINING FILMS — *by Capt Frank F. Rathbun, Infantry.*

A synopsis of twelve of the latest Infantry training films.

FORWARD OBSERVATION: SIMPLIFIED — *by 1st Lt A. R. Ives, Infantry.*

A short course in the target-grid method of fire control and several good examples of artillery fire commands.

FIREPOWER TODAY — *by Capt V. L. Antonioli, Infantry.*

A controversial article in which the author proposes a new method for computing the fire power of infantry units.

APRIL 1951

CROSS BEFORE YOU GET THERE — *by Major Robert G. Kimball, Infantry.*

Excellent charts, diagrams, and photos covering all phases of a company river crossing operation.

COMMUNICATION ON EXTENDED FRONTAGES — *by Capt. R. E. Womer, Infantry.*

A First Division officer tells how his regiment is now licking the problem of stretching communication over long distances in Germany.

MOVEMENT BY AIR — *by Maj Knut H. Raudstein, Infantry.*

The techniques used and the duties of all regimental staff officers in placing men and equipment aboard aircraft.

RIFLE PLATOON IN A NIGHT ATTACK — *by Capt Charles K. Blum, Infantry.*

Another useful, small unit problem covering every detail necessary for a platoon attack during the hours of darkness.

REGIMENTAL OFFICERS' SCHOOL — *by Col Strode Newman, Infantry.*

How one regimental commander solved the problem of setting up and running an efficient officers' school.

NAKTONG DEFENSE — *by Lt Col James W. Edwards, Infantry.*

Lt Col Edwards' second article covers the period 31 August to 16 September 1950. During this time his battalion defended on an extended frontage against repeated attacks by numerically superior forces.

THE 105-MM RECOILLESS RIFLE — *by Maj Lee W. Fritter, Infantry.*

An introduction to a new tank fighting weapon.

BEACHHEAD OF THE FUTURE — *by Maj Edward M. Flanagan, Artillery.*

A look into the future at airborne invasions showing a scheme of maneuver for a gigantic airhead.

THE PENETRATION AS A FORM OF MANEUVER — *by Lt Col James H. Reynolds, Infantry.*

When to use it, how to use it, and where to use it. While agreeing that the envelopment is the more favored form of maneuver, the author cautions against overlooking the decisive victory that can be obtained by a penetration.

EVALUATION OF WEATHER AND TERRAIN — *by Lt Col Raymond E. Daehler, Infantry.*

A short course for all commanders and staff officers in this vital subject.

THE 81-MM MORTAR PLATOON — *by Maj Charles B. Thomas, Infantry.*

Outlines the organization, communication, and employment of the 81-mm Mortar Platoon.

JULY 1951

THE INFANTRY AND ITS SCHOOL — *by Maj John W. Baumgartner, Infantry.*

A comprehensive history of the efforts of the Infantry to obtain a separate school for Infantry.

RIFLE COMPANY AS SUPPORT OF AN ADVANCE GUARD — *by Maj Robert G. Kimball, Infantry.*

An acute article on this vital company role, presented in the form of situations, requirements, and solutions.

PRINCIPLES OF ANTI-GUERILLA WARFARE — *by Lt Col Arthur P. Murphy, Infantry.*

Enlightening history and down-to-earth commonsense rules for combating partisans.

HAVE THEY MET THE TEST? — *by Capt Robert H. Philips, Infantry.*

A brief history of recoilless weapons, and an examination to see how they fit their assigned roles.

NIGHT PATROLLING — *by Capt Frank F. Rathbun, Infantry.*

A pictorial article showing everything the rifleman needs to know about movement and patrolling activities at night.

RIFLE PLATOON IN ATTACK OF A FORTIFIED POSITION — *by Capt Charles K. Blum, Infantry.*

Pillbox destruction made easy.